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THE
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EDITED BY
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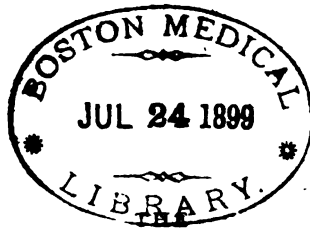
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BIRMINGHAM MEDICAL REVIEW.

JULY, 1897.

ORIGINAL COMMUNICATIONS.

THE GROUNDWORK OF THERAPEUTICS*.

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THE first and most pleasant duty imposed upon the occupant of this Chair is to thank the Branch for the great honour conferred upon him by selecting him for such an important office ; and this I beg to do most sincerely, my recognition of your kindness being reinforced by a deep consciousness of my deficiencies as I recall to my recollection those who have preceded me in this place.

I am proud of our Branch, not only because it is one of the oldest and largest, not only because it has supplied a large number of most important and influential officers to the Association, nor on account of its activity and good organisation, but more than all these because it has always shown itself able to take a leading part in the discussion of the burning questions of the day, and that its deliberations have been characterised by

* An inaugural address delivered at the Annual Meeting of the Birmingham and Midland Counties Branch on Thursday, June 17th, 1897.

remarkable moderation, liberality, and prudence. This character, which I trust you may never lose, gives to your collective opinion an influence which is second to none in the affairs of the Association, and is of an inestimable advantage to your representatives upon the Council. It is no less true that your authority has been maintained by your wise choice of those representatives, and no one can regret that their office is highly prized and frequently the object of keen contest. From such a struggle your representatives emerge with renewed vigour, and it is only in this way that the Council can be kept strong enough to bear the increasing burden of the responsibilities of our great Association.

But these topics must not be allowed to take up more of our time. We meet together, in the first place, for the promotion of medical science, and on these annual occasions it is incumbent upon your President to justify his vocation to the best of his ability by devoting the main part of his address to some scientific subject. The highest, and in many cases the most difficult of our duties is to heal the sick, and yet it is one which is expected from the humblest amongst us ; it cannot, therefore, be unprofitable to turn our thoughts for a short time towards the basis or groundwork upon which our treatment rests. There is no subject in which we are more exposed to the scorn of the scornful than the slow progress which has been made in the discovery of efficient remedies, and every language possesses a collection of biting sarcasms which suggest that whatever else we can do, we cannot cure diseases. The people who repeat these epigrams presume to regard us as ignorant pretenders, using remedies of which we know little, in conditions of which we know less. While not admitting for a moment that this view is either fair or accurate, we may allow that our treatment of disease is not as satisfactory as we could desire, and it may be instructive to review the circumstances that have co-operated to make therapeutics a laggard among the sciences, and to inquire how far there is a prospect of better progress in the future than has been in the past.

The desire to relieve the pain and suffering of other people, at any rate of those for whom he has natural affection, must always have supplied man with the strongest motives to seek for the necessary means. But in order that he can do this successfully, two things are essential. In the first place he must know the cause of the ailment, and in the second place he must have access to agents for its removal. For example, the extraction of a splinter from the hand is usually a successful proceeding because both these conditions can be fulfilled, and the simpler surgical procedures afford numerous illustrations of the same kind. But in the treatment of internal diseases neither can be readily attained. In fact, so baffling has been the search for the causes of diseases, that it has for long periods been abandoned in despair; but as the need for remedies has always been urgent, these have been and are constantly employed in an experimental manner, occasionally successfully, often, it must be confessed, without good results, and sometimes with distinct injury to the sick. When the proximate causes of disease are unknown, what principles are there to guide us in the selection of remedies; nay, what ground is there for assuming that such remedies exist? The answer to the latter part of the question appears to be the widespread belief that every ill has its remedy, a phase of the optimism so characteristic of human nature, which has enabled it to come off victorious in so many apparently hopeless contests with the forces by which it is surrounded.

But the principles which have guided the selection of remedies are very complex, and have varied from time to time in the history of therapeutics. Before the employment of remedies can be hazarded we must assume the possession of some knowledge of their medicinal action. We must enquire in what way this was obtained. As the sum of countless experiments primitive man arrived at a knowledge of the edible and nutritious as distinguished from the poisonous and harmful among fruits, roots, and other vegetable substances, and in the acquisition of this essential information he must have gained acquaintance with

the medicinal action of some of them. To take the simplest illustrations, he could not fail to recognise those which were purgative or emetic, and in this way a store of facts would be gradually accumulated. That this was accomplished there is no doubt, for primitive man as he exists in the present day possesses some share of this knowledge, and much of ours comes to us from immemorial antiquity. The question that remains is, how could this knowledge be successfully applied to the cure of disease?

It might be supposed that as men had in the course of time contrived to learn pretty correctly in the main what was good for food, they would also learn what was useful as medicine, and in a few instances undoubtedly they did attain this result. The reason success was not more frequent lay in the fact that the two problems are dissimilar. We derive accurate information from an experiment when we vary only one of its conditions, but if many are changed the result is inconclusive. Now the conditions of digestion and nutrition in healthy men are fairly uniform, but the conditions of disease are multiform, so that the results of such experiments with drugs are generally contradictory and confusing. Correct general conclusions cannot be drawn, especially when diseases are badly differentiated, as must have been the case in such primitive experiments. Every isolated success made then, as it does now, for the fame of the remedy and its administrator, but without permanent advantage to therapeutics. The failure of what we may call the popular empirical method compelled other attempts to solve the problem. Too often men fell back upon superstition, and attributed their failure to the power of supernatural agencies, but this was generally in the presence of those malignant epidemics which have always seemed beyond therapeutic resource. In happier times the healthy human mind has always turned to some more hopeful explanation of disease, and has tried to combat it by natural means. This is emphasised by the fact that even the priests, who under the influence of such superstitious notions have been so often appealed to for help in

disease, have generally become in the end true physicians, treating their patients by drugs instead of by prayers and incantations. In the hands of a regular class devoted more or less exclusively to the practice of medicine, possessing the art of transmitting by writing and by oral instruction the experience they acquired, a certain amount of knowledge would be accumulated, a rough nosology would be constructed, leading symptoms would be noted, many types of disease would be differentiated, and upon this basis a more orderly therapeutic system would be established, but it would be a treatment of symptoms, and the means used would too often fail to control the disease. This was the state of medicine in ancient Egypt and Greece for more than a thousand years, during which time it made scarcely any advance beyond this point.

The method was bad, and the task seemed hopeless, as Hippocrates must have thought. *Ars longa, vita brevis, experientia fallax*, sums up the result of the empirical method. But progress might be made by careful bedside study of disease, and observation showed that many maladies tend to a spontaneous cure. Therefore the physician has an ally whom he must seek to know, the *vis medicatrix naturæ* by whose help he may secure that which unassisted he cannot accomplish; or at least he must take care not ignorantly to hinder that which Nature can effect. Animated by such principles Hippocrates devoted himself to the study of the natural course of diseases; to noting how they are influenced by external conditions; to observing the indications of a favourable event or the reverse; and in this way he sought to widen the basis of therapeutics, while he limited its immediate application. Such a modest estimate of the function of the physician as Hippocrates conceived could not be popular. It was contrary to the prejudices of the public, which demands active intervention, and was consequently opposed to the interests of the physicians. It is therefore not surprising that, although many have preached in the name of Hippocrates, few have followed in his footsteps.

The post-Hippocratic practice of medicine among the Greek

and Roman physicians was a professional empiricism based upon better clinical knowledge of diseases, but there is no evidence that Hippocrates or his successors attempted scientifically to solve any part of the problem of the causes of disease. Their knowledge even of the nature of the symptoms which they endeavoured to treat was scanty and fallacious, for they had little real acquaintance with the structure and functions of the body in health or disease, while their pathology consisted in the Galenical doctrine that diseases were seated in the fluids of the body, and might be removed by purging, bleeding, sweating, etc.

During the decay of the Roman empire, and throughout the period which is sometimes called the Dark Ages, European medicine sank to a very low ebb. If the world is a stage upon which the powers of light and darkness contend for the mastery of mankind, and punish and injure him by sickness and death, the most potent remedies must be those means by which such supernatural powers are invoked or controlled. Prayers and holy water, amulets and charms, magic and spells, therefore, superseded drugs in the treatment of disease. Yet to some extent empirical medicine, following the Roman and Greek tradition, continued to be practised by the Jews and Mohammedans, and even by the monks themselves.

As faith declined and the influence of the Church began to wane, the European intellect became able to profit by the Greek teachers and Greek books which the fall of Constantinople scattered over the Western world. In this revival of learning the study of Greek medicine held a prominent place, but the genius of reawakened Europe could not be long confined by any parchment bonds. By the accurate labours of the Italian anatomists a solid foundation of scientific knowledge was laid, which has ever since held its place as the basis of medical education. Physiology followed more slowly, but Harvey's great discovery of the circulation of the blood had a most unhappy influence on therapeutics by the explanation it afforded of the pulse, the changes in which constituted such a notable symptom in disease, for it was owing to this discovery that blood letting,

a practice long established, developed so as to throw into the background every other therapeutic resource. With this important exception the great progress in anatomy and physiology had little direct influence upon medical treatment. The humoral pathology of Galen, which localised all diseases in the fluids of the body, to the great encouragement of bleeding, purging, vomiting, and sweating, was the orthodoxy of medicine for 400 years after the revival of learning. Like other orthodoxies it did not escape criticism, but so great was its reputation that it survived all attacks, and with that elasticity which is essential to long life, it incorporated in itself such new ideas as became popular. Thus the doctrines of Paracelsus, who classified diseases as states of tension, were incorporated with it, and we talk of "tonics" and "laxatives" to the present day. The animism of Stahl was very similar to the Hippocratic *vis medicatrix*, substituting the "soul" for "Nature," and the cautious practice it enjoined received the name of "expectant" treatment, a phrase still in common use. Brown's theory of "sthenia" and "asthenia" also adapted itself readily enough to the prevailing doctrine. It is worth noting that Paracelsus and Brown appear to agree in this merit, that in the absence of any certain knowledge of the nature and causes of diseases, they desired to direct treatment to the general condition of the patient rather than to particular symptoms. Unfortunately we can only judge of general conditions when we rightly appreciate all the particular symptoms, but this neither Paracelsus nor Brown was able to do, and consequently their rules were arbitrary, their indications fallacious, and their practical results often disastrous.

The orthodox therapeutics of the eighteenth century, the result of 2,000 years of scientific endeavour, is fairly enough summed up in the doggerel verse of Dr. John Lettsom (1744-1815):

When patients come to I,
I physicks, bleeds, and sweats 'em,
Then, if they choose to die,
Well, what care I?

L. Lettsom.

Even the progress of morbid anatomy at first did little to restrain the enthusiastic supporters of the evacuant treatment, which perhaps reached its highest development under the combined influence of Brown and Broussais at the end of the last century and the beginning of the present. In spite of the enormous advantages enjoyed for medical observation in the great hospitals which the genius of Christianity had established throughout Europe, only a small number of diseases had been differentiated. Even so late as in the edition of *Cullen's Practice of Physic* for 1796, although it includes insanity and diseases of women, there are only 71 headings as compared with over 300 in a corresponding modern work (1896) from which those special diseases are excluded. We know that this increase is due to the recognition of types formerly confounded together, and we can realise how much this confusion must have interfered with the successful progress of any empirical symptomatic treatment.

But the Galenical pathology, like many another great institution, was unable to withstand that revolt against authority which found its fiercest expression in the French revolution. The study of morbid anatomy transferred the seat of diseases from the fluids to the solids of the body, and with this change the evacuant treatment began to wane. Its decay afforded encouragement to many more or less fanciful systems, of which homœopathy, mesmerism, and hydropathy are the best known. They were all founded on false theories of disease, but such was the revolutionary spirit, that any doctrine which was opposed to authority was sure to find numbers ready to accept it. This spirit, so characteristic of the age in which we live, still influences, and often degrades, popular therapeutics.

The first half of the present century was marked by enormous strides in morbid anatomy, the primary effect of which was to produce a desponding sense of the uselessness of drugs, and to create a school of sceptics who were not even supported by the confidence in a benevolent nature which sustained Hippocrates. Yet this school, by devoting itself to clinical observation, to diagnosis, and to morbid anatomy, helped greatly to form a

better basis for therapeutics. Great progress also was made in experimental physiology and in chemistry. The relations of acids and alkalies had long before suggested pathological theories, and both had been extensively used in medicine with the object of correcting opposite states in the fluids of the body; but modern chemistry came greatly to the aid of pharmacy. Experimental physiology discovered the functions of the nervous system, and by demonstrating that the various organs, including the blood vessels, are under the control of the nerves, gave rise to the pathological conception of the nervous origin of disease.

The success of the experimental physiologists determined the formation of a school of experimental pharmacologists, who were able to show that many drugs excite or control nerve action and organic functions. This school has been, with some justice, accused of ignoring the essential importance of clinical experience, and of claiming for laboratory experiments more weight than can fairly be conceded to them. It is necessary to learn all that we can about the constitution and action of remedies, but until we know more than we do at present about disease, we cannot reason *a priori* about their application without great risk of failure, or worse than failure. Their use must be tested at the bedside, and so long as we have only symptoms to guide us in their selection, our choice is beset with fallacies.

It is a striking instance of the success of this school that it has asserted the right to teach therapeutics apart from clinical medicine, and even clamours to have its subject made a distinct part of the final medical examination, as if it had really established a scientific basis for the treatment of disease in the pharmacological data which it has so industriously accumulated. But the neuro-pathology, which was the groundwork of their system, has not stood the test of time, and the system itself will pass away into the limbo of the forgotten.

We have now traced the progress of therapeutics almost to our own days. I began by stating the two essentials for the cure of disease to be (1) The knowledge of the cause of disease, and (2) access to the proper agents for its removal. I have shown

how from failure to obtain the first of these, the search for the second has been for so many thousand years a haphazard proceeding, and that although we have learnt pretty thoroughly the structure and functions of the human body, and the changes in it caused by disease, although a great store of information has been acquired respecting the constitution and action of drugs, yet for want of the first essential condition of success, the evolution of scientific therapeutics has been impossible. Successive theories of disease have been started, pursued for a time, and then abandoned as false or inadequate. But in our own time, may I dare to express the belief that by the immortal labours of Pasteur, the true solution of this problem has been rendered possible? We are still, perhaps, too near to his discoveries, and not sufficiently emancipated from the dominion of older modes of thought to appreciate entirely the significance of the revolution they have effected in medical science.

Pasteur and his followers have proved to us that many infectious diseases are caused by minute parasitic organisms, and that the phenomena of these diseases, the fever, rapid pulse, nervous prostration, etc., are the effect of poisons generated in the body by these parasites in the course of their growth and multiplication; further, that what we call organic diseases are for the most part the results of the re-action of the tissues to those same poisons. Reasoning by analogy, we believe that all infectious processes will sooner or later be proved to be due to the same causes.

No better illustration of the extent of organic mischief caused by an infectious process could be desired than has been afforded by the recent epidemics of influenza. This disease, after having been absent in epidemic form for more than forty years, re-appeared amongst us six or seven years ago in a most virulent shape. Its pathogenic parasite, identified by Pfeiffer as a small motionless bacillus, has given rise to outbreaks of the most varied type, and to organic diseases of nearly every kind. We have seen that the same cause may produce coryza, pneumonia, gastro-enteritis, meningitis, peripheral neuritis, and acute

nephritis; and that it may leave behind it insanity, heart disease, chronic gastritis, Bright's disease, etc. These are not new facts, but they have been put before us very abundantly. We have long known that acute rheumatism is often followed by heart disease, and scarlatina by Bright's disease; but it is not sufficiently understood that all infectious processes possess more or less of this mischievous power, and that there is good ground for believing that organic disease mainly originates in the reactions of the tissues to the poisons secreted by parasitic organisms.

The successful revolution in surgical practice which has followed the acceptance of the discovery of the origin of those infectious processes which retard the healing of wounds and cause surgical fever, a revolution with which the name of Lister must always be associated, is well known; but it must be admitted that the attempts to destroy pathogenic organisms after they have gained access to the interior of the body by the administration of so-called antiseptic drugs have ended in failure. Yet these experiments have not been altogether without result, if we allow that it was through them that we learnt the value of salicylic acid in acute rheumatism, a discovery which has enabled us to alleviate vastly the sufferings of a most painful disease. But Pasteur's object in studying the causes of diseases was to discover a remedy for them, and his genius enabled him to seize upon a fact in the life-history of these organisms which afforded a clue. When a microbe is grown in a suitable medium outside the human body it inevitably happens that sooner or later its growth stops, and its vitality seems suspended; if it is transferred to a fresh supply of the medium it revives and renews the cycle of its existence, which in turn terminates in the same way. Careful investigation of this phenomenon showed that it does not depend upon the exhaustion of the material necessary for nutrition, but upon the presence of some new substance or substances produced by the microbe, and resulting from its vital activity. Thus, for example, yeast after a time ceases to grow, and falls to the bottom of the vat; if more sugar is added no effect is produced, but when the yeast is transferred to a fresh

solution of sugar at a proper temperature it revives; the inhibiting substance in this case is alcohol, produced by the action of yeast on sugar.

An analogous change apparently takes place whenever pathogenic organisms are grown in suitable media inside the body, a material being formed which limits the activity of the parasite. This material affords more or less protection to the host for a longer or shorter time against fresh attacks, and may in some cases be used to protect other individuals if introduced into their bodies. Pasteur regarded this material as at once the cause of disease and its cure; but further research has revealed that the vital products of these parasites are more complex. They consist, first, of a poison or toxin which produces the phenomena we call disease; secondly, of a substance called the alexin, which in some cases merely deprives the parasite of its activity, while in others becomes actually destructive to it; and, thirdly, of an antitoxin which neutralises the action of the disease-producing toxin, but does not affect or injure the parasite; the last two are generally spoken of collectively as "antitoxins." The second of these products is that which confers immunity or prevents the growth and development of the invading parasite; the third is curative, and if used in time prevents the phenomena of disease.

These discoveries open up an altogether new prospect in therapeutics, upon the threshold of which we are now standing. The medical press week by week records the pioneer attempts to apply these principles in the prevention or cure of rabies, diphtheria, tetanus, septicæmia, tuberculosis, cholera, plague, rinderpest, swine fever, etc. We should be unreasonable to expect that the most efficient methods for preparing and administering these new remedies can be immediately devised, and we must be prepared for many disappointments before conclusive results are obtained. Only widespread failure, carrying with it distrust of the new principles, will, it is to be feared, follow, if too great haste is displayed to apply on a large scale and with imperfect knowledge the little understood and crudely prepared

substances which the first attempts can supply. We can all remember the unfortunate result of the trial of Koch's too hastily announced tuberculin; but it is satisfactory to know that the discouragement so universally experienced has not prevented that distinguished investigator from sticking to the problem, and he has recently announced the preparation of an improved material,¹ for which we may all hope better success. In ordinary tuberculosis of the lungs there seems little evidence of the production of any alexins, as the bacilli go on living for years and continue their destructive process; but Koch affirms that in some cases of acute tuberculosis, especially in guinea-pigs, all the bacilli have been found to be dead. This observation affords a basis for the belief that there is a substance formed by or in the bacilli, which, if it can be separated from the poisonous toxins, and obtained in sufficient quantities, may prove curative.

The problem at present is how to obtain these antitoxins in sufficient quantity and separated from poisonous allied substances. One plan very generally in use is to employ the blood serum of an animal which has been made to pass through the infectious process, but such serum contains only minimal quantities of the remedy, and unfortunately may contain active toxins. The rabietic antitoxin is obtained by drying the spinal cord of an infected rabbit, during which process the toxin appears to diminish more rapidly than the antitoxin. If the antitoxin could be prepared direct from a culture of the microbe it would be possible to have it of any strength and in any quantity, but it would still need to be separated from its dangerous associates.

Koch's tuberculin was a preparation made directly from a pure culture, sterilised and extracted with glycerine, but it was a very complex body in which toxin and antitoxin were combined. In his new tuberculin he has endeavoured to effect this separation by trituration and centrifugation of an emulsion in distilled water of young cultures of the bacillus tuberculosis. By these means he has prepared a substance which is not soluble in glycerine, and when injected into the body produces no febrile reaction, but possesses powerful protective qualities.

Experiments on animals have shown that it takes from two to three weeks to produce complete immunisation : therefore it can be of no service in the later stages of consumption.

Professor Hirschfelder* of San Francisco, has adopted a different method for attaining the same object. He contends that the healing of peritoneal tuberculosis after abdominal section points to oxidation of the tuberculin as the means by which an immunising substance is formed, and he asserts that he has been able to prepare such a substance in large quantities from a virulent culture of the bacillus tuberculosis by mixing it with hydrogen peroxide and keeping it in a steam steriliser for four days. He thinks the same principle is applicable to other microbes, and he claims to have prepared by similar means a streptococcus oxytoxin, which he has used in some cases of phthisis in addition to the oxytuberculin. He even speaks of having made some trials with material derived from malignant tumours, cancers of the breast and stomach, which gave sufficient encouragement to him to induce him to pursue his researches.

A third method is that of Smirnow,³ who endeavours to separate the antitoxin from the toxin by means of the electrolysis of a culture in bouillon, the fluid in the neighbourhood of the positive pole becoming charged with antitoxin, which is regarded as an oxidised or hydroxidised toxin. This method has only been applied to the diphtheritic toxin, and not, so far as I am aware, to tubercle. Smirnow's claims are supported by Bolton and Pease* with experiments on animals, but I have not seen any published results of the use of this preparation in the treatment of disease in man.

In considering the possible utility of these remedies we must recognise that they cannot afford us an infallible cure for all cases. Their effect must depend upon (1) the stage of the disease ; (2) the virulence of the morbid process ; (3) the presence of complications. It is only in the early stages of disease before a fatal quantity of toxin has been secreted that any real benefit can be derived from remedies which kill the bacillus or antagonise the toxin. As the toxin varies in its intensity, it is always

possible that a small quantity of great virulence may be formed before it is possible to use the remedy. Lastly, when there are complications such as old-standing organic disease, a small quantity of toxin of moderate virulence may prove fatal before the remedy can be used or in spite of it. As these conditions must occur from time to time, diseases will continue to claim their victims even when all that we now hope for shall have been attained.

Our attitude towards these researches should be one of appreciative attention, for we may be well assured that never before in the history of the world has there been so hopeful a prospect of solving the great problem of the prevention and cure of infectious disease. If the history of therapeutics is one of promises constantly unfulfilled, it may be thought too sanguine to hope for better fortune now ; but we stand to-day upon an edifice erected by the labours of all the collateral sciences, and it is somewhat remarkable that it is to a chemist engaged in researches intended primarily to aid the great wine and silk-growing industries of France that we owe the discoveries that have opened to us a new era in medicine. Nothing could illustrate better than this fact the dependence of therapeutics upon the general advance of science. The labours of innumerable workers in chemistry have been needed to furnish the key which has unlocked the secrets of fermentation, and has led to the discovery of the nature and causes of infectious diseases. It is so great a thing, to have made these enormous strides in the knowledge of the causes of disease that we may be excused for anticipating that this department of our science will, before many years have passed by, be complete and perfect, but we must not forget that when this is effected only half the therapeutic problem is solved. Its completion places therapeutical research upon a sound basis, but it does not ensure that that research shall be successful. Our sanguine hopes in this direction depend entirely upon that optimism which has always been our best source of inspiration.

I think it is a vague recognition of this that makes therapeutic scepticism so unpopular that it is difficult and almost dangerous

for a physician to maintain an attitude of even reasonable scientific doubt without risking his reputation as a practitioner. Yet the best friends of therapeutics have not been those who have been the most enthusiastic devisers of new remedies, but those who have paved the way by the study of the etiology and diagnosis of disease ; and our therapeutic progress, as individuals as well as a profession, will always be limited by the extent to which we have attained mastery of those subjects.

Unfortunately, the less a man knows of diagnosis and the smaller his acquaintance with the clinical varieties of the diseases which go under the same name, the more likely he is to overestimate his therapeutic successes. Even Trousseau confesses that in his younger days he attributed the excellent results he obtained in scarlatina to his method of treatment, until at length the epidemic changed in type, and he had to admit that he was no more able than other people to control the disease. How many instances are there of drugs which have gained a great temporary reputation from having been introduced at the time when an epidemic was on the wane and the malignity of the infection had diminished? Such facts justify caution in accepting therapeutic conclusions even when based on statistics, and there is no reason to believe that such an attitude, if generally adopted, would hinder progress.

It is not my intention to trouble you with the seamy side of modern therapeutics. We all deplore the overwhelming influence of advertising, the confusion created by the enormous multiplication of remedies, good, bad, and indifferent ; and the pernicious influence upon medical practice of the popular love of change and novelty. These are much less agreeable topics than those to which I have directed your attention, and on this occasion I would rather look on the pleasant side of things. The nation is just about to join with our honoured Queen in rejoicing at the completion of the longest reign in our history. It has been not only the longest reign, but, in respect of the progress achieved, quite the most remarkable ; and we are glad to attribute no small share in that progress to the civic peace which we have enjoyed under the mild rule of our beloved and

most gracious Sovereign. As loyal subjects, we congratulate her on her long life, and as members of the medical profession we wish her health and strength to enjoy for many years to come the happiness of seeing her children's children growing up around her, and her people on all hands waxing greater, stronger, and happier.

We believe that the medical profession has the warmest sympathy of the Queen and Royal Family in all matters pertaining to our scientific advancement and to the relief of human sickness and suffering. This city will in a few days enjoy a signal mark of Royal favour in the visit of Her Royal Highness Princess Christian to open the new General Hospital on behalf of Her Majesty the Queen. We all know how ardently that Princess has devoted herself to the encouragement and promotion of the profession of nursing—a profession to which we owe in so large a degree the efficiency of our therapeutic efforts. We can assure her Royal Highness of a warm welcome from all classes, but I venture to think that we as a profession may feel ourselves entitled to regard this visit as an especial compliment, and we shall be second to none in the expression of our grateful and loyal acknowledgments.

In bringing this address to a close I would ask you to bear in mind that progress in therapeutics depends primarily, not on our knowledge of remedies, but upon our acquaintance with the nature and causes of disease and our ability to differentiate its various forms. It is by the advance of knowledge along these lines that to-day we dare to hope that we stand within measurable distance of the solution of the problem which has baffled the wit of man since first he knew the meaning of disease and death.

REFERENCES.

- ¹ Koch, Some New Preparations of Tuberculin, *The Medical Week*, April 16th, 1897. ² Hirschfelder, Die Behandlung der Tuberculose und anderer Infectiösen Krankheiten mit Oxytoxinen, *Deutsch. med. Woch.*, Therap., Beil., No. 4, 6 Mai, 1897. ³ Smirnow, Ueber das künstlich dargestellte Diphtherie-Antitoxin, *Berl. klin. Woch.*, 1896, p. 597. ⁴ Bolton and Pease, The Production of Antitoxin by the Passage of Electricity through Diphtheria Cultures, *Journal of Experimental Medicine*, vol. i., No. 3, p. 537.

THE SPAS OF MID-WALES.

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LAST August I spent a week amongst these and was very agreeably surprised both as regards the value of their springs and the pleasantness of the country.

LLANDRINDOD is a bustling irregular collection of houses, which strikes the visitor aggressively with a feeling of unfinished newness. It is evidently still in the hands of the builders, many of the houses having their garden plots not yet fenced in, or merely protected in an untidy temporary manner. There are two or three short streets of shops with more or less isolated boarding houses or terraces of lodgings clustered around them. The Old Pump House and the Rock House are the two principal hotels; of these, the former is the more picturesquely situated and seemed to me to offer superior accommodation, but the Rock House has the advantage of being much nearer the best drinking water (the Park Wells).

The town, some 700 feet above the sea, is situated almost in the centre of a breezy, undulating common of gorse and heather, which slopes as a whole W.N.W. to the pretty, winding Ithon. To the E. the common merges into the Little Hill (850 ft.). This is a paradise of breezy strolls, though but slightly affected by the visitors; it takes but a few minutes to find oneself alone and untrammelled by humanity. Its sides are intersected by paths climbing up through shady underwood to uplands of gorse and heather, thickly dotted over with hawthorns and rowan, over which many sheep with wool of snowy whiteness roam. From the top of Little Hill it is easy to see that one is in the centre of an amphitheatre some 20 miles in diameter, most open towards the West, and most enclosed on the East by Radnor Forest

(2,400 ft.). The ring of hills is wanting in variety, it consists of green, smooth-topped, sheep-fells, and makes one long for the craggy irregularity of North Wales. Llandrindod is, in fact, near the centre of Radnor, perhaps the most purely agricultural county in Great Britain. The climate corresponds. The air cannot compare with that of the mountain resorts of Switzerland or even with that of the Yorkshire Moorlands (cf. Goathland near Whitby). It has not the almost pungent sharpness which makes one sniff in energy and alertness with every breath. It is not champagne. On the other hand, it is distinctly that of an elevated region and strikes one's senses as tonic and perfectly pure. It has none of the oppressive luxuriousness characteristic of the West Coast seashores—a richness so inducive of metabolic torpor that even at Weston super-Mare a medical man once told me two-thirds of his patients were “hepatic.”

On the common are good golf links with a pretty lakelet some quarter of a mile in length with rowing boats for hire.

The Park is a complete amphitheatre, almost circular, some 60 feet deep, with its sides pleasantly wooded. At the bottom is a pump room containing the wells of greatest popularity. In comparison with foreign spas it is a very poor affair, and the baths are primitive, too few, ill-furnished and not strikingly clean in appearance. The Park itself is scantily provided with paths, which practically only radiate from the pump room to the top of the amphitheatre, instead of being spiral and serpentine. They consequently are far too steep: they are also ill-kept, a little rain making them muddy. The only shelter is the pump room, and on a wet morning this literally steams with the hot water in multitudinous glasses and the respirations of multitudinous votaries. For the Llandrindodians are good drinkers: they at once disabused my mind of the preconceived notion that the English temperament was too independent for the successful development of its Spas. They did their duty by the water with a steady perseverance worthy of a far better pump room and, if there was any deficiency of the mercurial element in their demeanour, this was fully accounted for by their depressing surroundings.

In the Old Pump Hotel is another pump room, but this does not seem to be so numerous patronised, though the character of the saline water is practically identical, whilst the room is as pleasant and the grounds better kept. The baths too here are an improvement upon those of the Park, though still leaving much to be desired.

The sulphur spring at the Park is considerably stronger than that at the Old Pump (4 cub. ins. of sulphuretted hydrogen to the gallon as against 2.62) and in the grounds of the Park is also a chalybeate. These two are perhaps the cause of the Park's popularity. In the grounds of the Old Pump Hotel, Dr. Greenway discovered a chalybeate spring whose analysis, by Mr. Silvester of West Bromwich, states that it contains manganese as well as iron, a fact which should greatly increase its efficacy. However, at present, it is not in any way made use of.

BUILTH is a quaint little Welsh town on the Wye—old fashioned and straggling and probably cleaner than it looks. It has an attractive esplanade along the south side of the river stretching between the town bridge and the junction of the tributary Yrfon. Along this are several substantial new residences, very comfortable in appearance and very pleasantly situated.

The Wells are two—the Park and the Glanne. They are arranged on a much smaller and more primitive scale than those of Llandrindod, and their patronage appears to be small in comparison. A considerable amount of the saline water is sent to Llanwrtyd and to various parts of England, its great strength enabling it to keep indefinitely and also to stand dilution, thus lessening the expense of carriage. Indeed, the saline water of this Park well undiluted, is very rasping in its effect on the stomach and would cause considerable pain to anyone with gastric neuralgia or catarrh. The Park well is ideally situated—in a rich greensward, which forms the little arena to a beautiful sylvan amphitheatre of deciduous and evergreen trees, the whole traversed by a few pleasantly sloping and well-shaded paths. Close to it is a simple, plain, but cosy boarding house, clean and inviting. A little way off is the bath house containing four baths, two of which

will compare very favourably with those of Llandrindod. To those who love perfect quiet and isolation, and prefer the details of rich woodland scenery to the wide breezy stretches of open uplands, this Park Well Boarding House should prove an idyllic resting place. The air tastes as pure as at Llandrindod, but it is less exhilarating and the dainty little arena is much shut in by trees. Builth is the usual place of residence, the visitors driving or walking along the intervening mile and a half of road, but to do this twice daily on a hot summer's day must sadly detract from the pleasantness, if not the efficacy of the cure.

Three quarters of a mile along a beautiful path from the Park Well brings us out to the Glanne, situated in a charming glade on the Clowefrn, a tributary of the Yrfon. The well is a mild sulphur one, the accommodation only that of a mere shanty. The people were grouped about under the trees, some of them with handkerchiefs of provisions. It seemed to be patronised by the natives only.

LLANWRTYD has a very strong sulphur well, and yet the exquisitely clear sparkling water is by no means unpleasant to take and tastes but slightly of sulphuretted hydrogen. Its pleasantness is probably chiefly due to its containing so few saline solids in solution. So much is this the case that Builth saline water—which comes by rail daily in barrels—is mostly drunk as well.

In 1893, Dr. Greenway of Llandrindod, advised that the well be hermetically sealed so as to increase the amount of gas in solution by pressure. This was done to some extent by placing a heavy lid on the well with the result that the amount of sulphuretted hydrogen was raised from 5 to 10 cubic inches in the gallon. A year or two later the well was rebuilt. The peaty morass was cleared away right down to the gravel from which the water rises. A cement cylinder, 5-ft. in inside diameter, was then placed upon the gravel and of sufficient height to rise 2-ft. 6-ins. above the newly made surface of the ground. This was the state of things when I saw the well last August. The lid was loose and, as it was opaque, was, I suspect, frequently removed so as to see the bubbling water beneath. But I have

just heard (June 18th, 1897) that it is now hermetically sealed with a plate glass disc. The water is withdrawn for drinking through ebonite taps in the side of the well. Since the sealing the water so withdrawn is "visibly effervescent," and contains most likely from 15 to 20 cubic inches of sulphuretted hydrogen gas per gallon.

Ebonite pipes also take the water to the Dolecoed Hotel, where they are continued into gun metal coils cased with tin and the water heated in water-tube boilers. In this way the water gets hot without loss of sulphuretted hydrogen gas and is drawn off into the baths of the hotel. These sulphur baths are luxurious in their appointments, beautifully clean, and indeed leave nothing to be desired by the most exacting bather. At the same time I can scarcely believe that the hot bath water is as strongly impregnated with sulphur gas as that in the pump room; it certainly neither has so strong a taste nor smell. Still, I have nothing but praise for the able and costly endeavour that has been made to keep the sulphur in the water, and though I went carefully over the apparatus, I could see no flaw in the method employed, and should think what loss occurs is unavoidable. In other words, these baths seem as powerful as a purely natural bath of sulphuretted hydrogen can be made.

Llanwrtyd is a pleasant little village about 650 feet above sea level straggling along the banks of the Yrfon to Dolecoed Park where are the welis. Here the valley narrows, the hill sides grow steep and a most picturesque road leads up alongside the stream to the lonely little hamlet of Abergwessin, five and a half miles from Llanwrtyd. The Park is a beautiful stretch of green-sward with the river babbling through it, but the Pump Room is small and primitive.* In fact the striking feature in all these watering places is the lack of any display or even comfort

* Since writing the above I have learned that "the pump rooms have been rebuilt, the new floors are all laid with terrazzo marble mosaic, and the external surface of the well is covered with Roman mosaic." From a photograph kindly sent me I should imagine that these new rooms are a very great improvement and that with their broad eaves and low pitched roofs they quite add to the charms of the landscape.

in the Pump Room, forming a ludicrous contrast to the palatial buildings of such German Spas as Homburg, Baden, or Ems.

There is nothing in Llanwrtyd to distinguish it from an ordinary village, and yet I was told that the number of Welsh visitors who pack into it in the summer months is astounding. Llandrindod had prepared me for this as one was often curious to know how the multitude that egressed from some of the houses disposed of themselves during sleep. But Llanwrtyd I was told outdid Llandrindod; Llandrindod has many English as well as Welsh; and the English do not appear to possess the knack of sleeping so compactly.

The Dolecoed at Llanwrtyd is a charming hotel, quiet and homely, but with a distinct style of its own resembling the ease and comfort of a country house. The cooking was excellent, light, with nothing that could vex the most fastidious palate, and yet with a background of sufficient solidity to appease the robust appetite of the passing tourist.

The immediate neighbourhood of Llanwrtyd is distinctly more interesting than is that of Llandrindod, and the short excursions are pleasanter. But Llandrindod has no doubt the more bracing and stimulating climate. The air is equally pure at both and, though there is no breezy common at Llanwrtyd, yet the situation is open. The difference in climate, which is not universally admitted, is due I think to difference in rainfall. At Llanwrtyd, according to the only data I could command, this was 70 inches, whilst at Llandrindod the average yearly rainfall for the years 1883—1892 inclusive, was 38 inches, varying from 27 inches in 1892 to 47 in 1886. June and July have below the monthly average rainfall; August and September above it; as is seen in the accompanying table:*

June	2·5	inches	} Average of Ten Years.
July	2·95	"	
August	3·88	"	
September	3·37	"	

* For these statistics I am indebted to Dr. Greenway of Llandrindod.

Such an excessive rainfall as 70 inches must make the atmosphere moist, and moreover tend to prevent outdoor exercise. Hence, as a climatic resort, the preference must be with Llandrindod.

LLANGANMARCH belongs to a different kind of Spa altogether. It is a prettily situated little village between Builth and Llanwrtyd, lying snugly against a wooded hill, which shelters it from the N. and E., and bounded on the other side by the Yrfon. The new hotel is a comfortable and airy building 600 feet above the sea, its grounds sloping to the river and containing a pretty lake, around which are pleasant paths creeping up the wooded hill side, measured and graduated after the manner of Certeil. Down by the river bank is the Pump Room and Bath house, the baths are clean and good, but too small, whilst the rooms are only pine wood cubicles. There are some good Golf Links some way up the hill side and, for those who are strong enough to climb to the top, a most beautiful and extensive panoramic view is spread out in an atmosphere of exhilarating purity.

Llanganmarch's claim to fame resides in its Barium spring. This has caused it of late to gain great notoriety, but in all probability it will be the comet of a season only. Not from any want of sterling value in itself, for it will vanish under the resistless force of metropolitan thirst, since, if the present London water scheme be carried out, the spring will be some 50 feet beneath a huge reservoir, which will flood the Llanganmarch valley right up to the doors of the new hotel itself.

Perhaps it will be better to dispose of Llanganmarch first and then return to the waters of the other Spas. Not much need be said for there has been a Barium boom in the therapeutic world of late, and of Llanganmarch Barium in particular. A few years ago so little was this metal *en évidence* that neither Wood (Ed. 1888) nor Ringer (Ed. 1886) so much as mentions it.

The experimental results are strongly in favour of barium acting like digitalis, both on the heart muscle and the arterioles; but Dr. Hare points out that the pulse wave is longer and the

artery less tense after barium than after digitalis. If this be so, it would certainly be a point in favour of barium.

The Llanganmarch water does not depend upon barium alone for its results :—the following are the amounts of the solids per gallon (70,000 grains) according to an analysis made in the Lancet Laboratory.

Sodium Chloride	...	186 grains
Calcium Chloride	...	85·5
Magnesium Chloride	...	20
Barium Chloride	...	6·5
Lithium Chloride	...	·9
Ammonium Chloride	...	·3

It has been suggested that the chloride of calcium assists the barium salt in its action, and it is noteworthy, as pointed out by Dr. F. George, that the two exist in the Llanganmarch water in the relative proportion of their pharmaceutical doses, viz., 1 to 13. But Dr. Brunton's experiments show that though both have the same action on the vascular system, viz., to strengthen the heart's contraction and contract the peripheral vessels, yet they are antagonistic to each other. Barium's action is rapid, whilst that of calcium is gradual, and Brunton found that if the administration of a calcium salt follow that of barium, then the barium pressure curve is reduced to normal by the calcium before this latter produces its own more gradual curve. Whether this experimental antagonism affects the action of the drugs clinically, no one has, so far as I am aware, made any attempt to prove. The proof would be difficult of accomplishment, and could only be achieved by repeated trials of each drug separately and the two in combination under similar conditions.

Whatever this relative action may be there is a quantity of clinical evidence to show that in the proportions they exist in Llanganmarch water their joint action is beneficial in many cases of heart failure, especially where irregularity or dilatation is the chief defect. The gouty heart seems to be particularly benefited. Some of this benefit, it is suggested, is due to the grain of chloride of lithium, which each gallon of the water contains.

This would give a daily dose of a quarter of a grain of lithium chloride a day ; a very small dose it is true, but he would be a rash man and no true physician who should assert that, existing as it does in a natural water and very minutely divided, it is too small to have good and even powerful effect on the constitution.

Many instances are recorded of the good result of treatment with this water in cases of strumous disease and anæmia ; here the calcium chloride is the most valuable ingredient in all probability, its usefulness in this class of diseases having long been recognised.

The dose of barium chloride is very variously given by different authorities : Phillips in his *Materia Medica and Therapeutics* says, gr. $\frac{1}{4}$ to gr. $\frac{1}{2}$ stimulates the stomach, increases the appetite, and often causes loose stools ; that larger doses prove irritant or caustic, *e.g.*, gr. 3, several times daily, soon causes epigastric weight, nausea, vomiting, purging, and faintness ; that a drachm has proved fatal in 17 hours. On the other hand, continental physicians have given up to gr. 40 daily without producing injurious symptoms, though Phillips states that with full doses the heart, at first stimulated, is soon powerfully depressed.

As far as Llanganmarch is concerned, Dr. Black Jones, the resident physician there last summer, told me he prescribed one to three half pints ($1\frac{1}{2}$ to $3\frac{1}{2}$ grains) thrice daily, and had noted no untoward symptom. He also prescribed baths of the water, and thought they had much the same action as those of Nauheim.* He furthered ordered massage, Schott movements, or Cætel locomotion according to the strength of the patient.

Dr. Jones very courteously gave up the best part of an afternoon to satisfy my importunity and I gathered from him that, whilst allowing much for the mode of life, the charm of change and scenery, and the excellence of the climate, still he felt convinced that the water had much to do with the improvements he had observed. He appeared to me to have systematically

* These he gives at a higher temperature (95° to 100°) than they are given at Nauheim. He also insists upon 30 minutes siesta on a couch, both before and after the bath. This is, to my mind, a very important adjuvant as well as a wise precautionary measure.

studied his cases ; he told me he hoped to continue his observations this summer, and I trust he will soon publish the results of these.

Returning to the saline water, the following are the proportions of the chief constituents in the various springs—in grains per gallon :—

	LLANDRINDOD.			BUILTH.	
	<i>Old Pump.</i>	<i>Park Saline.</i>	<i>Park Magnesian.</i>	<i>Park Well.</i>	
Sodium Chloride	334	263	236	—	878
Calcium Chloride	68	95	89	—	249
Magnesium Chloride	3	24	49	—	6
Potassium Chloride	2	2½	1½	—	0
Lithium Chloride	0	0	0	—	1¼

We may compare with these the following simple saline springs :—

	KISSENGEN.		HOMBURG.		SODEN.		LEAMING- TON.	CHELTER- HAM.
	<i>Rakoczy.</i>	<i>Elisabeth.</i>	<i>Milch.</i>	<i>Wi.hof.</i>	<i>Pump Room 1.</i>	<i>Pittoille 1</i>		
Sodium Chloride	373	690	168	945	673	503	—	—
Calcium Chloride	—	50	—	—	—	—	—	—
Magnesium Chloride	21	55	—	—	4	—	—	—
Potassium Chloride	20	25	9	22	—	—	—	—
Lithium Chloride	1¼	1½	—	—	—	—	—	—
Magnesium Sulphate	42	—	—	—	60	—	—	—
Calcium Sulphate	—	—	—	—	165	—	—	—
Sodium Sulphate	—	—	—	—	—	96	—	—
Magnesium Carbonate	—	—	19	11	—	13	—	—
Calcium Carbonate	70	150	31	13	6	14	—	—
Ferrous Carbonate	2	2¼	—	—	½	—	—	—

From the foregoing brief analyses it will be seen that the Welsh waters compare very favourably with the others as examples of pure saline medicinal water. Homburg and Kissengen have appreciable amounts of chalk, and Leamington has a considerable quantity of sulphate of calcium.

Kissengen and Leamington contain sulphate of magnesia whose aperient qualities aid the action of the simple saline water in many cases, but their efficacy must be to some extent neutralised by the constipating effect of the carbonate and sulphate of calcium.

The sulphate of soda in the Cheltenham water places it on the borderland between the simple saline and the Carlsbad groups.

The one advantage Kissengen and Homburg have over

Llandrindod and Builth resides in the large amounts of free carbonic acid which they contain ; they are *aerated* waters. This, I think, is no mean advantage ; this gas no doubt makes the water "sit" much more pleasantly on the stomach.

When we come to compare the Welsh waters *inter se* we find that at Llandrindod, the Park Wells have rather less sodium chloride and correspondingly more of the chloride of calcium and magnesium than has the Old Pump Well ; they should possess therefore slightly more anti-strumous and aperient qualities than this latter. The Builth Park well is, roughly, three times the strength of the Old Pump, with a little lithium chloride added. This diluted with an equal quantity of hot water makes an excellent saline drink and, as it keeps indefinitely,* this Builth water is the most suitable for drinking away from the Spa.

But drinking at home and drinking at the Spa are two very different things ; as different as drinking amidst the hilarity of a social evening and the secrecy of a bedroom. This, after all, is only matter of common sense. At the Spa you rise at or before 7-30, stroll in the fresh morning air to the pump room, get a glass of water, sit out on a bench and sip it at your leisure, then stroll again ; and so on till you have drunk two to five glasses. Then with a cleansed stomach and a clean palate you saunter home to breakfast with a healthy and hearty appetite. After breakfast you sit or lie at ease for an hour and then go out to golf, or ride, or walk with the satisfaction of having done your duty and, moreover, earned your due reward. One of the chief annoyances, and perhaps the most depressing of all influences to the invalid at home, viz., the sense of being unable to keep pace with those around him, to keep up with them—vanishes here. At the Spa it is the invalid who sets the fashion ; the mode of life and customs of the place are made for him : it is he who is in the "swim ;" and the keen sense of power and mental elation

* I have kept a jar for nine months and the Manager at the Wells told me he had done the same for two years ; in both instances without any deterioration in the purity of the water.

this novel sensation gives him, is perhaps scarcely understood by the healthy man who finds the place "confoundedly slow." The healing efficacy of so strong a mental tonic is however, undoubted and, though unconsciously taken, is a most powerful restorative.

The medicinal action of the water is that of a dilute solution of sodium chloride. Plouriez (*Comptes Rendus*, t. xxv.) analysed his blood after taking 150 grains of sodium chloride daily for three months, in addition to the normal quantity : he found (*a*) decided increase in the red corpuscles, (*b*) slight increase in the fibrin, (*c*) decided decrease in the albumen. Therefore, he concludes that it has a tonic influence.

Its direct action on digestion is much disputed, but probably it acts merely as a condiment. It is very doubtful whether it increases the elimination of urea.

But whatever the action of sodium chloride, the effect of a course of simple saline water is distinct and undoubted. A general stimulation of the glandular system, especially the liver, spleen, and glands of the alimentary tract, an increased peristalsis and an increased renal activity—these are the good results to be expected. Hence it is of service in all forms of catarrh, respiratory, gastric, and intestinal; in hepatic torpor and constipation with and without hæmorrhoids; in chlorosis and malaria and other anæmic states; and lastly, in the various manifestations of gout, including glycosuria.

The Park chalybeate spring contains in each gallon:—

Sodium Chloride	...	294 grains
Calcium Chloride	...	64 „
Magnesium Chloride	...	12 „
Potassium Chloride	...	3½ „
Carbonate of Iron	...	1¼ „

It is thus practically the same as the simple saline springs at Llandrindod, with the addition of a grain and a quarter of carbonate of iron in each gallon. The indications for its use follow naturally, viz. : in all cases where anæmia is a marked symptom, unless it be otherwise contraindicated, and also as a

tonic regimen after the secretory functions have been well established by a course of the simple saline water.

Chalybeate springs naturally divide into pure and saline chalybeates: the Tunbridge Wells water is a type of the former, other representatives being Flitwick, the Cambray Spring at Cheltenham, and some of the Harrogate waters. Of the saline chalybeates the Llandrindod Park Spring contains a very small proportion of iron in comparison with others, as the following table shows:—

	LANDRINDOD.			HARROGATE.	
	<i>Park Chalybeate. Kissengen.</i>			<i>Chloride of Iron. Alexandra.</i>	
Sodium Chloride	294	—	675	278	176
Calcium Chloride	64	—	87	94	0
Magnesium Chloride	12	—	65	57	5
Potassium Chloride	3½	—	21	3	1
Ferrous Carbonate	1½	—	9½	11*	5½

* Plus 13½ grains of chloride of iron.

	HOMBURG.			KISSENGEN.		
	<i>Elisabeth. Luisen. Stahl.</i>			<i>Rakoczy. Salinen.</i>		
Sodium Chloride	690	217	410	—	373	826 grains
Calcium Chloride	50	0	35	—	0	0 to the
Magnesium Chloride	55	6	22	—	21	52 gallon.
Potassium Chloride	25	6	17	—	20	0
Ferrous Carbonate	2½	4½	7	—	2	3

From which we see that it is even weaker in iron than the Rakoczy of Kissengen or Elisabeth of Homburg, which waters are drunk as simple saline waters, the Luisenbrunnen and Stahlbrunnen being used at Homburg when iron is indicated. On the other hand, the Harrogate saline chalybeates are four to nine times as strong in iron.

If then, we desire a very mild chalybeate, and one that will not constipate, but will agree with the most delicate digestion, it would seem that we could not do better than prescribe Llandrindod chalybeate water. Such, indeed, appears to be the case. Dr. Greenway, *e.g.*, has reported a rapid cure of a patient suffering from "profound nervous debility and anæmia," due to lead. But he suggestingly ends his report with these words, "This case is a common illustration of what the air, climate, and chalybeate water can accomplish in broken down constitutions." He places the air and climate before the water, apparently believing

in their greater efficacy. That at any rate is my own belief, and I think that if the Park chalybeate were in the centre of Birmingham it would prove of little value as an iron tonic, though some efficacy might still reside in its saline constituents. This in no way militates against its doing excellent service amidst the surroundings of Llandrindod.

The accompanying table contains details of the chief Sulphur Springs of Great Britain :—

<i>Name of Spring.</i>	<i>Amount per Gallon of Sulphuretted Hydrogen (in cubic inches).</i>	<i>Other constituents in grains per gallon</i>	<i>Climate</i>
Askern	15.73	Calcium Carbonate 59 " Sulphate 37 Magnesium " 27	
Builth	? "strong"	!	Moderately bracing
Harrogate— Old Sulphur	10.16	Calcium Carbonate 30 " Chloride 44 Magnesium " 42 Sodium " 894 Potassium " 10 Barium " 7 Sodium Sulphydrate 5	Bracing and dry. 27 inches of rain on 211 days in 1890
Harrogate— New or Mild	4.18	Calcium Carbonate 23 " Chloride 17 Sodium " 583 " Sulphydrate 7	
Llandrindod. Old Pump	2.62	Calcium Carbonate 9 Sodium Chloride 163 Calcium " 49	Bracing & fairly dry. 38 inches of rain
Llandrindod, Park	4	Calcium Carbonate 16 Sodium Chloride 61 Magnesium " 24	
Llanwrtyd	10, said to be 15 since the sealing of the well	Sodium Chloride 61 Calcium " 13	Bracing. 70 ins. of rain
Moffatt	Weak		Bracing. Rainy
Strathpeffer	11.26, plus 4 grs. of Sulphur in suspension	Calcium Sulphate 51 Magnesium " 32	Relaxing. Dry.

In estimating the strength of a well whose value depends on the amount of sulphuretted hydrogen in solution much attention must be given to the way the water is obtained for bathing or

drinking, as the gas is very volatile. Further, we must note the existence of any other ingredients whose action may prove injurious. Lastly, the pleasantness of the water is an important factor with many patients. The Harrogate springs are very strongly impregnated with salts which would sometimes make them unsuitable for exhibition and certainly renders them very nauseous to the palate. The Welsh springs are far milder and much more palatable: that of Llanwrtyd being particularly pleasant; this has a pure, exhilarating freshness so slightly flavoured with sulphuretted hydrogen that it is difficult to believe it is as strongly impregnated with that gas as any spring in Great Britain except Askern (and perhaps now as strong as Askern itself). Moreover, the manipulation of the water at Llanwrtyd is so excellent that I very much doubt if any other sulphur spa can compare favourably with it as to the actual strength of the water drunk or bathed in.

The action of sulphur is diuretic and slightly aperient: should it not act as a laxative some saline water or other drug must be taken along with it, as in a constipated subject it is apt to produce serious colic. Sulphur water is of use in all kinds of gout and in articular rheumatism. It is sometimes of use in muscular rheumatism also and in sciatica. Chronic catarrhs and most chronic forms of skin disease receive benefit from it. Finally, it aids in the absorption of inflammatory products, in the reduction of enlarged glands. The Llanwrtyd water in addition is said to be specially efficacious in renal calculus, hæmaturia, and albuminuria. Sulphur, both internally and as baths, is said to be dangerous in cases of serious heart disease. I think this statement will be modified as time goes on; the action of a sulphur bath and that of a strong saline ("Nauheim") bath seem to me from personal experience to be very nearly allied; both of them strengthen and also slow the heart. Both kinds of bath may prove fatal to a patient with a diseased heart and, on the other hand, I believe both may prove of benefit to patients with sufficient strength.

To sum up: these Welsh spas contain good examples of

mild saline and chalybeate waters (Llandrindod); of a strong saline (Builth); of a strong sulphur one (Llanwrtyd); and of a barium spring (Llanganmarch). They all possess beautifully pure, fresh, and invigorating climates, though these are devoid of much of the rigour of northern spas.

REFERENCES.

- Bäder-Almanach. VI. Ausgabe. Rudolf Mosse. Berlin.
- Climates and Baths of Great Britain. Edited by W. M. Ord, M.D. and A. E. Garrod, M.D. Vol. I. Macmillan. London.
- Climate and Health Resorts. I. Burney Yeo, M.D. Cassell. London.
- The Harrogate Waters. G. Oliver, M.D. H. K. Lewis. London.
- The Mineral Waters of Llandrindod Wells. Sulphur, saline, and chalybeate. Three pamphlets. A. C. Greenway, M.D. John Heywood. Manchester.
- South Wales. C. S. Ward, M.A., and M. J. B. Baddeley, B.A. Dulau and Co. London.
- Kissengen Spa. J. F. H. Stöhr, M.D. Meisenbach, Riffarth and Co. Munich.
- The Mineral Waters of Homburg. Published by Gebr. Tönnies. Düsseldorf.
- Our Baths and Wells. J. Macpherson, M.D. Macmillan. London and New York.
- The Leamington Waters. F. W. Smith, M.D. H. K. Lewis. London.
- The Natural Mineral Waters and Spa of Leamington. R. Eardley Wilmot, M.B. W. H. Smith. Leamington.
- Materia Medica and Therapeutics. C. D. F. Phillips, M.D. J. and A. Churchill. London.
- Pharmacology, Therapeutics, and Materia Medica. T. Lauder Brunton, M.D. Macmillan. London.
- The Barium Springs of Llanganmarch. Report of the *Lancet* Laboratory and other Communications. The *Lancet*, Nov. 24th and Dec. 1st, 1894. London.
- A Treatise on Cheltenham Waters and Bilious Diseases. Thomas Jameson, M.D. Third Edition, 1814. Murray, Fleet Street, London.
- Sanitary Statistics of Cheltenham. E. T. Wilson, M.B., 1865. Longmans. London.
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WAS ROBERT HOUSTON OF GLASGOW THE FIRST OVARIOTOMIST?*

BY THE LATE J. GREIG SMITH, M.A., F.R.S.E., BRISTOL.

IT was time that the question of the paternity of Ovariectomy were settled for or against the Glasgow surgeon; it is satisfactory that the decision comes from Houston's chief supporter, Mr. Lawson Tait. In his paper in the last issue of the *Birmingham Medical Review*, he surrenders the whole case for Houston. But, characteristically enough, Tait surrenders with his back to the wall.

Never perhaps in the whole history of science has a claim to the highest honour been made on less grounds than this of Houston to be the father of ovariectomy.

It is curious how the main points in disproof of the arguments of his supporters are supplied by Houston himself. Houston's story is clear enough, he makes no claim to having done ovariectomy. Men were about then beginning to doubt whether an "ovarian dropsy" so-called was not more than a dropsy, but perhaps a cystic tumour, and whether tapping was enough as for other dropsies, but that removal might be called for. Houston devotes the appendix to the very paper which is said to describe the removal of an ovarian tumour to prove that the tumour so-called is really dropsy, and may be caused by traumatism. As I have said, Houston would as soon have thought of removal for dropsy of the ovary as amputation for dropsy of a leg. Tait says he cannot understand this and that therefore it is nonsense. Quaintly enough he asserts that he also believes that ovarian

* This article was found amongst the papers of the late Mr. Greig Smith, and has been kindly forwarded to us by Dr. L. M. Griffiths, the Assistant Editor of the Bristol Medico-Chirurgical Journal. There is some evidence to show that Mr. Greig Smith had revised at least part of it, but it is of course impossible to know whether he regarded it as complete. We publish it without alteration of any sort.—[Ed.].

tumours are dropsies; he removes them, usually. Next we ordinary surgeons will be told that when organs become dropsical they are to be removed.

Houston's contemporaries might even by Tait be supposed to know something about Houston's work. Donald Munro, another Scot, does not believe in the theory of some French surgeons, that ovarian dropsies are tumours and ought to be removed; he insists they are mere dropsies, and says they should always be tapped or incised. And he quotes in support of his belief this very case of Houston where it was cured by incision.

It was not enough that Houston should be the first ovariologist, he must have forced on him the honour of being the first to suggest operation for extra-uterine foetation. It really was almost painful to have to point out that Houston wrote his paper with Cyprianus' work in his hand, and quotes from him abundantly, and that this work consists of a full description of a successful operation for extra-uterine foetation.

This is Tait's position:—

1. Houston did not remove an ovarian tumour.
2. Houston did not incise an ovarian tumour.
3. Houston did not divide an ovarian pedicle.

Therefore—4. Houston was the father of ovariectomy.

Solvuntur tabulae risu. Smiles alone answer such arguments.

APPENDIX.

Greig Smith was first my pupil, then my friend, and our friendship was fast till that rapid ending so deeply regretted by all who knew him. He was of course no ordinary pupil, and he rendered to his master no ordinary homage, as the first edition of his text-book proved. His friendship remained fast as all his subsequent writings and intercourse proved. We have had the one difference, and it is, as I have said, one of no importance. But I adhere to my position in claiming for Houston the first deliberate cure of an ovarian tumour by operation, and this Greig Smith does not dispute. He only says "Houston makes

no claim to have done ovariectomy." How could he, when ovariectomy, like the famous umbrella in the opera, "was not then invented?" He could not claim to have done an "ovariotomy," for that wicked word had not then been coined, and even now is not defined.

It is needless to follow Greig Smith in the pathological word storm he has raised, for he has the fallacy of an *undistributed middle*.

What I have done at least is to show that Houston met with and accurately described a distinct variety of ovarian tumour (or dropsy) which has been identified solely by the accident of this discussion, and but for Greig Smith pointing out my error about the pedicle I might never have hit upon the truth about these curious tumours. That I have done so is clear from many witnesses, of whom the first is another old pupil, Dr. Emery Lamphear of St. Louis, Editor of the *American Journal of Surgery and Gynecology*, who writes to me, "With much pleasure I have read your remarks upon Robert Houston's case; I quite agree with you in every particular. One of my latest ovariectomies was of exactly the kind you describe. It gave much trouble in emptying the abdomen, there was no pedicle, nothing but shreds."

With this I close this discussion, more pained by its ending than I have ever been before, for death has beaten me, he has taken my opponent, my friend.

LAWSON TAIT.

THE NEW GENERAL HOSPITAL.

THE near approach of the opening of the New General Hospital by Princess Christian on the 7th of this month affords a fitting opportunity for a brief description of some of its main features. It is true that the building is not yet ready for immediate occupation; but the advanced stage which has now been reached gives every reason to expect that the ensuing autumn will see the

hospital in full working order, whilst the intervening period will give an opportunity for its inspection by those who are interested in seeing what, it is hoped, will prove to be one of the most complete and convenient examples of modern hospital construction. By the kind permission of the Council of the Royal Institute of British Architects, we are enabled to republish certain of the plans which appeared in a recent number of the Journal of the Institute, accompanying a paper by the Architect of the Hospital, Mr. Henman, on "The Construction of Hospitals." The plans of the ground, first, and second floors, will be found at the end of the article.

The hospital is built on what would be a rectangular piece of ground, completely surrounded by streets, were it not for the fact that a portion of the southern angle has not yet been acquired by the Committee. The longer sides of the rectangle face the south-east and north-west, and look on Steelhouse Lane and Weaman Row, respectively, the former being chosen for the front aspect of the building; the shorter sides face Whittall Street and Loveday Street. The back of the hospital looks directly upon St. Mary's Square, and thus gains a cheerful and open outlook which adds greatly to the prospect as seen from the wards of the north-western pavilions.

When viewed from Steelhouse Lane the hospital appears to be built around a central court-yard, having for its right side the out-patient department, above which are built the front wards of the north pavilion, and for its left, the front of the other or south pavilion. The central block, along the face of which runs an open cloister, is approached by a triangular carriage porch, which will form the main entrance to the interior of the hospital. On each side of, and a little behind this central block, rise two handsome towers, which will be utilised for the storage of water, and which, though they somewhat dwarf the central part of the building, add greatly to the appearance of the whole.

As will be seen on reference to the accompanying plan of the ground floor, the hospital consists of a series of four large and

two short pavilions arranged on either side of a long connecting corridor, which runs from north-east to south-west. Isolated blocks are further provided for the Nurses' Home, the Pathological Department, and for wards for septic and infectious cases; though the first mentioned of these is connected with the main corridor by a covered conservatory—an arrangement which ensures the much to be desired end of enabling the nurses to reach their apartments without leaving the shelter of the building.

The "Administrative Department," containing the Medical Committee Room and other accommodation for the Staff, the Residents' sitting-rooms and bed-rooms, and the various dining halls, occupies the whole of the central block which lies between the two chief pavilions, and from this, access is gained to all parts of the in-patient department by means of the chief corridor which runs through the centre. In order, however, to enable the Officers to reach the Out-patient and Casualty Department with the least possible loss of time, the cloister in front of the block is made to lead directly into this department. The south-western end of the same cloister opens again into the ground floor of the main southern pavilion, the whole of the front of which is occupied by the House Governor's and Matron's Offices, together with the Board Room and Committee Rooms. On the first floor of the central or administrative block is a separate suite of apartments for the accommodation of the House Governor.

The Out-patient and Casualty Department occupies the north-eastern extremity of the building, and will be entered directly from the central court-yard. It consists of a large central waiting hall, around three sides of which are grouped the various consulting and casualty rooms. Besides two medical and two surgical consulting rooms, each with two retiring rooms, there are medical and surgical casualty rooms, an ear and throat consulting room, and an extra room which will be at liberty for various purposes. At the other end, the hall opens into a dispensary waiting hall, from which, after receiving their medicine at the dispensary window, the patients emerge by a separate exit,

which thus prevents their entrance at all into the main building of the hospital. This end of the hall also opens into a short transverse corridor, by which access is obtained to the interior of the hospital when in-patient treatment has been decided upon, and into a room for the carrying out of massage and electrical treatment.

The short corridor just mentioned, which crosses the main corridor at right angles, leads directly at its extremity into a large ward, which, together with its fellow in the southern pavilion, will be reserved for male accident cases. On the right-hand side this corridor opens, first on two small wards adjoining the out-patient department, for the accommodation of noisy patients, in which it is also intended to keep for short periods certain cases of doubtful nature, until the diagnosis can be satisfactorily established; and secondly on a large lecture theatre, access to which for the teachers will be obtained from the basement. Proceeding thence along the main corridor, the administration block, already described, is reached, and afterwards the offices and second male accident ward. Beyond these are two small wards which are intended to accommodate burn cases; and further on still, the Conservatory, through which the nurses will pass to the Nurses' Home.

The first and second storeys do not require a detailed description, seeing that they are laid out on precisely similar lines. It may suffice to say that the small pavilion is occupied by Children's and Gynæcological Wards, and by two small operating rooms; whilst at the other extremity of the corridor is situated the main Operating Theatre.

This Theatre is a large semicircular room, well lighted from the sides and roof, and containing tiers of benches for the onlookers. The floor is of Terazzo, and the walls have a dark marble dado, with alabaster above: the latter has been treated with paraffin to make it non-porous. A suitable board provides an electric surgical engine, lighting for lamps of various voltage, and other similar purposes. Two adjoining rooms, opening into the theatre, are for the administration of the anæsthetic, and the preparation of instruments, dressings, etc., required in the

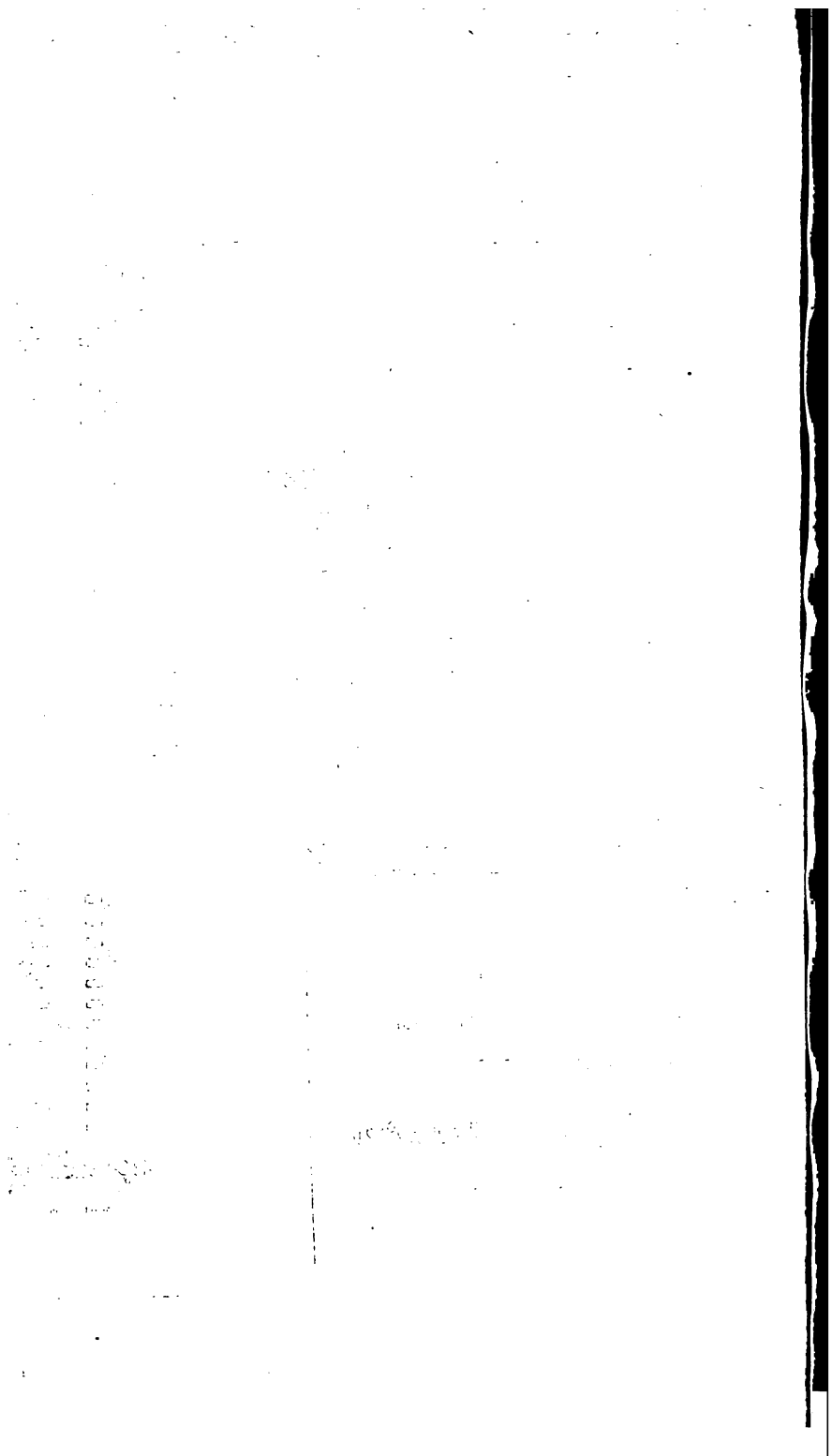
theatre. There are three other small theatres, two of which are treated much on the same lines.

The large wards on the first and second storeys are allotted equally to medical and surgical cases; the southern pavilion to the former, the northern, adjoining the theatre, to the latter. Each of these wards will contain 24 beds, and is provided with lavatories at one end, and with a Doctor's room (for urine testing, etc.), kitchen, and two small single wards at the other. In addition, a day room is provided for each pair of wards, for the use of convalescent patients. All the wards are floored with closely-fitting teak boards. All corners are carefully rounded off, so as to prevent the accumulation of dust; and no rails, or other attached articles will be allowed, for the same reason.

The Hospital Chapel is situated on the first floor, and opens directly on to the main corridor. It is a large and lofty room, with an arched ceiling, and is walled throughout with marble. Three ornamental windows will be glazed with stained glass, being the windows erected to the memory of the late Surgeons, Mr. Bartleet and Mr. Jolly. That the Chapel will be a very beautiful room is evident even in its present somewhat unfinished condition.

The kitchens and food store rooms are situated entirely at the top of the central, or administration block, and are particularly well arranged and equipped. On either side of the passage, which runs from end to end of the storey, are arranged a series of store rooms and larders, together with a large room, furnished with three sinks, for washing and preparing vegetables, etc. At the front end of the passage is a large L-shaped apartment, the long arm of which constitutes the kitchen proper, whilst the short arm is reserved for the purpose of cutting up and distributing the food. At the upper end of this division, and forming a barrier which completely cuts off the end opening into the kitchen, is an iron counter, which is capable of being heated, and on which the joints will be carved. The portions allotted to the various wards will then be placed upon heated metal trolleys, which will be at once wheeled on to two large lifts, and distributed throughout the hospital.





Running from floor to ceiling of the kitchen proper are two large pillars or columns, which in reality contain the air shafts leading from the Residents' apartments. Around these columns are placed the whole of the cooking apparatus, for one half of which steam, and for the other gas, is used. Many of the points of this apparatus have been especially designed for the hospital; and it is believed that the whole will prove to be extremely efficient for the purposes aimed at. The walls of the whole of the story are covered with white glazed tiles.

The lifts, mentioned above, are of sufficient size to be used for passengers as well as for food, and will be in constant use for all purposes. On the ground floor, they communicate directly with the Resident' pantry, and almost directly with that for the Nurses' and Servants' dining halls, as well as with the main corridor. The process of distribution of the food will thus be very greatly simplified.

The ventilation is planned upon the so-called plenum system. In the basement, air is drawn in at four points through moistened screens, by means of which it is freed from impurities and rendered suitably humid. In cold weather it is passed over coils of steam pipes, and is then propelled by powerful fans along large air-ducts, from which open the flues passing to the various wards and rooms. The foul air is conducted by separate ducts to turrets protected by flaps and louvres, through which it makes its escape. Water pipes, with hose connections, are fixed at intervals along the ducts, so that efficient cleansing can be carried out. The temperature of the in-coming air can be regulated at will, according to the needs of the several wards; and, except in the residents' sitting rooms, no fireplaces are provided in any part of the hospital. The entire heating and ventilating arrangements have been carried out under the direction of Mr. William Key, of Glasgow, the inventor of the system.

The hospital will be lighted throughout by electric light, and the ventilating fans will be propelled by the same power. Arrangements have been provided in the various wards and out-patient rooms, by which the supply of electricity can be used for the electrical treatment of patients.

REPORTS OF CASES.

CASE OF LEAD-POISONING.

BY ALFRED H. CARTER, M.D., F.R.C.P.

THE following case of lead-poisoning is one of special interest by reason of the eclamptic seizure in which it culminated, and the unusual complication of acute pulmonary tuberculosis.

C. C., a married woman, æt. 26, was admitted into the Queen's Hospital under my care on April 17 last, suffering from colicky pains in the bowels, recurrent vomiting, and obstinate constipation. Her occupation was that of a metallic pencil-case drawer. Lead entered into the composition of the metal employed. She always enjoyed fairly good health until eight weeks ago, with the exception of anæmia, habitual constipation, and scanty irregular menstruation.

At that time she was seized with pains and swelling in the shoulders, knees, and ankles, which was regarded as an attack of rheumatic fever. She kept her bed for five weeks, and shortly after this she was attacked with severe colicky pains in the bowels, pains in the back, and headache. From the first onset of her illness she vomited occasionally, but lately more often. The bowels were very confined throughout. The pain and vomiting were always relieved after an action of the bowels. She complained of no cough nor expectoration, and her nutrition had not materially suffered.

State on admission.—Moderately anæmic. Temperature normal. Tongue moist and coated with a slimy brown fur. Gums exhibit well-marked blue line. Appetite bad. Has some pain in the stomach, especially after food. Abdomen superficially tender, chiefly below the level of umbilicus, with general soreness on deep pressure. The bowels are confined, and the rectum was found to be crammed with hard fæces. Some shortness of

breath on exertion, but no cough or expectoration. Respirations 28. Breath sounds vesicular, with no adventitious sounds of any kind. Pulse 100, high tension. Heart normal in size. Sounds clear. Aortic second sound sharply accentuated. No nervous symptoms were observed. Urine scanty, high-coloured, 1018, acid, faint haze of albumen, trace of blood. No casts noted. Some smarting pain on micturition.

A diagnosis was made of lead-colic—probably associated with some nephritis. The bowels were cleared by enemata, after which she felt much more comfortable.

April 21st Complained of pain in the shoulders, and down the legs, but nothing abnormal was noted in those parts. The urine, which had been very scanty, was increased (56 ounces were passed in the previous 24 hours).

April 22nd. Urine not so abundant (24 ounces in 24 hours), sp. gr. 1020, only the faintest trace of albumen, no blood, with cayenne-pepper-like deposit of uric acid. Otherwise comfortable. Temperature, M. 99.6°, E. 100°.

April 24th. At 9.30 a.m. had a general convulsion, of sudden onset without any warning, lasting two or three minutes; afterwards shouting, and trying to leave the bed; then slept soundly till mid-day. During afternoon kept rolling her head from side to side, and lapsing into coma. Temperature, M. 98.6°, E. 100°. No urine passed since early morning.

April 25th. Lies on back, quite unconscious. Face pale and dusky. Breathing noisy, with rattling of phlegm in air-tubes. Breath-sounds coarse, vesicular, and accompanied with numerous moist sounds all over chest. Percussion-note normal. No urine passed. Temperature, M. 101.2°, E. 101.2°. Respiration, M. 52, E. 44. Pulse, 136.

April 27th. In much the same condition. Temperature higher. One ounce of urine withdrawn by catheter. Died in the afternoon.

Autopsy.—Body wasted. Pericardium healthy. The heart (8½ oz.) showed nothing abnormal. Right pleura slightly

adherent postero-laterally, of old standing. Both lungs crepitant, but on section showed abundant deposit of tubercle scattered throughout both lungs. Tubercles small (white or yellow), each surrounded by a small areola of consolidation, but there was no aggregation of tubercles, nor any excavation. Pleura not tubercular. Peritoneum normal. Liver 41 oz., somewhat fatty. Kidneys (right 4 oz., left $3\frac{1}{2}$ oz.) were anæmic, slightly fatty, but otherwise free from lesion. No morbid lesions were found in brain.

(The liver substance has since been analysed, and considerable traces of lead were found.)

Remarks—Viewing the case in the light of *post mortem* evidence, the most striking feature is the singular absence of signs or symptoms pointing to pulmonary tuberculosis. Beyond some rise of temperature, moderate increase in the frequency of respiration, and moist sounds observed during the last three days of life, there was nothing to suggest the existence of any pulmonary inflammation at all. The difficulty is increased by an opinion expressed by Dr. Stanley to the effect that the appearance of the tubercles seemed to be incompatible with the view that they had first occurred only a few days before death, and suggested a duration of at least a few weeks. If this be true, it is remarkable that such a condition could exist practically without signs or symptoms.

The occurrence of convulsions followed by fatal coma is well recognised as a rare complication of plumbic intoxication. Authorities are not agreed as to their pathology. The only cases that I have seen have occurred in young women. In the present instance, I have a strong impression that the proximate cause of the convulsion and coma was suppression of urine—in other words, that they were essentially uræmic.

Dr. Todd, of King's College, London, in a clinical lecture published nearly fifty years ago, related cases of what he called "epileptic coma" occurring in conjunction with lead poisoning, in all of which the attack was preceded by serious diminution in the amount of urine.

MEDICAL ABSTRACTS.

URINARY AND RENAL DISEASES.

BY ROBERT SAUNDBY, M.D., F.R.C.P.,
PROFESSOR OF MEDICINE, MASON COLLEGE ; PHYSICIAN TO THE
GENERAL HOSPITAL, BIRMINGHAM.

DIABETES.

Discussion on Renal Diabetes. Berlin Society of Physicians.—
The Medical Week, 1896, p. 311.

Dr. Klemperer finds that when 100 grammes of carbo hydrate are administered to an individual these are stored up in the liver as glycogen, and pass gradually into the blood which contains at least '08 per cent. of sugar. When 200 grammes are taken, some passes directly into the blood which contains about '2 per cent., and sugar appears in the urine. If, however, only 150 grammes are taken the sugar in the blood is increased, but there is no glycosuria unless diuretics are given. The glycosuria which occurs in the second case is "regulatory glycosuria," but "renal diabetes" is glycosuria which occurs when the sugar in the blood does not exceed '1 or '12 per cent. He attributes this to some change in the renal epithelium. Phloridzin causes glycosuria without hyperglycæmia, and in subjects with granular atrophy of the kidney no sugar may appear in the urine after the administration of phloridzin. He compares with this certain cases in which glycosuria and albuminuria are combined, wherein the sugar disappears as renal atrophy becomes established. Consequently the renal epithelium is responsible for the passage of sugar into the urine. In these cases ingestion of sugar does not increase the glycosuria, the kidneys being unable to eliminate the excess of sugar from the blood.

Prof. A. Fränkel says he has never met with a case of renal diabetes in man, but he regards that condition to be one in

which the patient has pronounced glycosuria but no hyperglycæmia in spite of the copious ingestion of carbo-hydrates. He thinks the disappearance of sugar in the albuminuric patient may be explained by the action of some retained substances on sugar assimilation.

Dr. Magnus Levy finds that phloridzin always causes glycosuria when injected hypodermically, whatever the state of the kidneys, although it may fail when given by the mouth.

Prof. Fürbringer refers to other causes of the disappearance of sugar, such as the supervention of tuberculosis, and disputes any relation between the state of the renal epithelium and glycosuria.

Dr. Albu believes that a healthy kidney retains sugar, but a diseased one lets it pass.

Dr. Klemperer, in reply, had found that in his cases of diabetes ingestion of carbo-hydrates neither increased the glycosuria nor the glycæmia, and the practical deduction is, that strict diet is a mistake, the principal endeavour being to keep the renal apparatus in order.

Pavy, J. W. *Phloridzin Diabetes*. Proceedings of the Physiological Society, Nov. 14th, 1896.—*The Lancet*, 1896, vol. ii., p. 1850.

It has been asserted by von Mering, and generally accepted, that in the glycosuria caused by the administration of phloridzin there is no excess of sugar in the blood, and on this account it has been suggested (by von Noorden) that the glycosuria is due to some specific action on the kidneys by which these organs no longer keep back sugar from the urine, but Dr. Pavy finds fault with von Mering's method of analysis, and in certain observations of his obtained results which show that the sugar in the blood is increased.

Strümpell, A. *Zur Ätiologie der alimentären Glycosurie und des Diabetes mellitus*.—*Berliner klin. Wochenschr.*, 1896, 46, p. 1017.

The appearance of sugar in the urine is dependent directly upon its excess in the blood, and this excess is due probably to

the varying capacities of individuals to assimilate sugar. Healthy persons generally show some temporary glycosuria after the ingestion of 150 grammes of glucose. The rapidity with which the sugar is absorbed is as important as the quantity; thus the same quantity of sugar which may cause glycosuria if taken all at once may give rise to none if divided into three portions and ingested in the course of an hour. The author has administered definite doses (100 to 150 grammes) of glucose mixed with a little cognac to a number of cases in his wards. He obtained a negative result in marasmic individuals with severe organic disease, in marked anæmia (chlorosis, etc.), in liver cirrhosis, catarrhal jaundice, and in two well-marked cases of chronic gout, in progressive muscular atrophy, in arteriosclerosis, and in traumatic neurasthenia. Positive results were obtained in five cases, all heavy beer drinkers and corpulent. He attributes this to a toxic reduction of the sugar-assimilating function from the abuse of alcohol and the excessive introduction of carbo-hydrates in the beer. He would divide diabetes into endogenous and exogenous. The former includes the severe cases in young people and is to be attributed to a congenital nervous predisposition often manifested in some nervous ailment in the patient or his relatives; the latter includes "fat diabetes," the diabetes of great eaters and beer drinkers, and is not to be sharply divided from alimentary glycosuria.

Poll, H. *Ueber alimentäre Glykosurie bei Fiebernden. Fortschr. der. Med.*, 1896, No. 13.

In consequence of observing marked alimentary glycosuria in a pneumonic patient, the author carried out a series of investigations on 16 patients, of whom 11 were cases of pneumonia, 2 enteric fever, 1 acute rheumatism, 1 tonsillar abscess, and 1 scarlatina. In 14, glycosuria occurred after ingesting 100 to 150 grammes (3 to 5 oz.) of grape sugar; one excreted 8 per cent., but as a rule only $\frac{1}{2}$ to 3 per cent. of the ingested sugar was excreted. (Fever *per se* increases glycogenesis, but as a rule infective processes diminish it, as has been often observed during the occurrence of intercurrent attacks of infective fever in the course of diabetes).

Williamson, R. T. *A simple method of distinguishing diabetic from non-diabetic Blood.* *Brit. Med. Journal*, 1896, vol. ii., p. 730.

Dr. Williamson's method depends upon the power of decolorising a solution of methyl blue, which he finds is possessed by diabetic blood. He mixes 20 cm. diabetic blood, with 40 cm. of distilled water, 1 cc. of methyl blue solution (1 x 6000), and 40 cm. of liquor potassæ; the test tube containing the mixture is heated in a water bath for about four minutes. He attributes the decolorisation to the presence of excess of grape sugar, and he has satisfied himself that it does not occur in the blood of healthy persons, or of those suffering from other non-diabetic disorders.

Kahn. *Deux cas de diabète grave chez des jeunes sans urobiline.*—*Arch. gén. de méd.*, 1896, vol. ii., p. 760.

These two cases occurring in persons aged respectively 20 and 25 years, are remarkable for the entire absence of urobilin from their urine, on spectroscopic examination. In the second case the urobilin appeared when the patient developed tuberculosis. But the urobilin referred to here seems to be what is called in this country pathological or febrile urobilin, so often met with in liver diseases, etc., as the author draws the conclusion that no liver lesion could have been present in these cases, and attributes the appearance of urobilin in the second case to the supervention of tuberculosis, in which condition he says his master, Prof. Hanot, has always noted its presence.

West, S. *Further contribution on the Treatment of Diabetes Mellitus by Uranium Nitrate.*—*Brit. Med. Journ.*, 1896, vol. ii., p. 729.

Dr. West has published five more cases in support of the value of uranium nitrate in the treatment of diabetes. He says that one of his former cases refused to continue the remedy as she attributed to it an attack of "dyspepsia with a little looseness of the bowels," a view which he deprecates, although "the symptoms passed off when the drug had been suspended for a time." Of the new cases, No. 1, aged 22, died after leaving hospital; No. 2,

aged 44, had the percentage of sugar lowered from 6·8 to 4·6 after using the drug ; in No. 3, aged 25, there was a reduction of the percentage from 6 to 4, and the patient was able to eat toast regularly ; No. 4, aged 60, improved in health and strength, while the percentage of sugar fell from 6 to 5 ; No. 5, aged 41, suffered from dyspepsia which was aggravated by the drug, so that he could not continue its use.

Bradbury, J. B. *Case of Diabetes Mellitus treated by Uranium Nitrate.*—*Brit. Med. Journ.*, 1896, vol. ii., p. 847.

The patient, aged 17, was suffering from moderately severe diabetes, urine 8 pints, sugar 7600 grains ; on diet, urine 10½ pints, sugar 4664 grains. Uranium nitrate was given in gradually increasing doses until it caused some diarrhoea ; under this treatment his urine had fallen to six pints and the sugar to 2600 grains, while he was only 4 lbs. heavier than on admission. After leaving hospital he continued to take 15 grs. of the drug thrice daily, which occasionally caused diarrhoea necessitating its omission for a few days. At the end of five months he had gained altogether 7 lbs. in weight, his urine was reduced to 3½ pints, and the sugar to 2170 grains. [This result is by no means striking.—Rep.]

Charrin. *Milk Diet in Diabetes.*—*The Medical Week*, 1896, p. 286.

Referring to the obvious desirability of employing in cases of diabetes, complicated by albuminuria, or gastric or hepatic lesions, Dr. Charrin finds that the objection that milk increases the glycosuria does not hold good. The daily amount must not exceed three litres. These researches, which were conducted by M. Guillemonot, accord in their result with those of Bouchard and Chauveau.

Robertson, A. *Case of Diabetes Insipidus from disease of the fourth ventricle ; treatment by electrification of the medulla oblongata ; recovery.*—*Brit. Med. Journ.*, 1896, vol. ii., p. 1020.

The patient was a soldier aged 33, urine 200 to 260 ounces, sp. gr. 1002 to 1003, no sugar or albumen, duration six months. The diagnosis of disease in the region of the fourth ventricle

rested on partial and permanent paralysis of right side of face, and temporary loss of power of left arm and leg, temporary impaired articulation, unilateral facial flushings, and occipital headache. The earlier treatment included iodide of potassium and mercury; voltaic electricity was applied by placing a large positive electrode on the back of his neck and introducing the negative electrode through the nostril so as to rest on the cervical spine; the strength of the current was increased from half to five milliamperes, and its duration at each sitting from one to six minutes; it was employed every second or third day for seven weeks. At the end of this time the urine was diminished to 88 oz. of sp. gr. 1010.

Hansell, H. F. *The Ocular complications in Diabetes Insipidus*.—*Philadelphia Polyclinic*, January 30, 1897.

Hansell refers to the scanty notice of this subject and quotes Bader (*Ophth. Hosp. Rep.*, 1861, p. 291), as having recorded a case of a man, aged 39, with polyuria, monocular retinitis and vitreous hæmorrhages, Galezowski one with simple retinal hæmorrhages (*Traité des mal. des yeux*, 1891, p. 646), and then relates a case in which a patient aged 39 passed 79 ozs. of urine daily on admission; the fundus presented in one eye round white patches of degeneration, with flame-shaped hæmorrhages and a star-shaped area of degeneration on the *nasal* side of the disc; the other eye could not be examined owing to a cataractous lens. There was no albuminuria, under treatment the quantity of urine became normal, and the patient left hospital relieved. (The case is a very doubtful one, and the other instances on record are so rare that they may be not unfairly regarded as accidental complications).

BRIGHT'S DISEASE.

Gillespie, A. L. *Albumosuria in Chronic Kidney Disease*.—*The Lancet*, 1896, vol. ii., p. 109.

Dr. Gillespie reverts to the subject of the presence of albumose in the urine in Bright's disease, cyclical albuminuria, etc., and ventures the suggestion that it is derived from the leucocytes

of the blood, as in almost all the conditions under which albumoses have been hitherto found in the urine. Excessive proliferation of the leucocytes in the body is present.

Jaksch, R. v. *Beitrag zur Kenntniss der Uricacidämie der Nephritiker*.—*Centrbl. f. inn. Med.*, xvii. 21, 1896.

In the blood of nephritic patients, von Jaksch has found uric acid present 16 out of 18 times; he has also found it in the dropsical fluid. In two instances he observed that the amount of uric acid in the blood was less during uræmic attacks than at other times.

Tirard, N. *Indigestion and Bright's Disease*.—*The Lancet*, 1896, vol. ii., p. 377.

Dr. Tirard desires to lay stress upon the relation of long standing dyspepsia to chronic Bright's disease as a "predisposing cause." This causal relation has found many supporters, notably George Johnson and Murchison, and this paper does not carry the matter further. How does chronic dyspepsia cause Bright's disease, and may not both be the effects of a third factor? These questions require an answer, but Dr. Tirard does not give them.

Widal and Sicard *Opalescence and lactescence of the blood serum in certain albuminuric patients*.—*The Medical Week*, 1896, pp. 548 and 559.

In certain cases of Bright's disease, acute, subacute, and chronic, the authors had found the blood serum opalescent or lactescent, and the microscope showed round small refractive immovable corpuscles of variable size, not staining with eosin, methyl blue, or fuchsin; no fat corpuscles were present. In healthy persons during digestion this opalescent serum may be found, and they ask whether the urine at these times is albuminous. Prof. Hayem said the condition was common in animals, but exceptional in human subjects, as he had only met with it once, in a patient with popliteal aneurism. Dr. Achard had met with it in a phthisical patient with albuminuria, and in rabbits infected with the proteus coccus. Dr. Variot had observed it in dogs injected with anti-diphtheritic serum.

Macaigne. *Etude sur la néphrite colibacillaire d'origine sanguine.*—*Arch. gén. de méd.*, 1896, vol. ii, p. 722.

The researches of Hallé and Albarran have shown that the bacillus coli is the principal cause of ascending pyelonephritis, the infection reaching the urinary organs *per urethram*, but it may also attack the kidney through the circulation, such cases having been reported by Achard and Renaut, Fernet and Papillon, Chantemesse and Widal, Jeanselme, and E. Graf. It is especially likely to occur at the end of an attack of enteric fever, but may follow a simple catarrhal lesion of the intestine, or may originate in a pulmonary cavity, which is often infected by this microbe. Where none of these are present the source of the infection must be attributed to the mouth or pharynx. It is usual to incriminate the normal bacillus coli which is supposed to become virulent, but drinking-water such as that of the Seine may contain bacilli coli already virulent. In the cases referred to in this paper the renal trouble was not a complication of a general affection, but constituted the entire disease. It occurred in two forms; in the first, it presented all the characters of acute parenchymatous nephritis, and occurred in varying degrees of intensity, as slight, medium, and severe; in the second, the suppurative form, pyelonephritis; the main distinction clinically is the presence of pus in the urine. In the former type the severe case was typhoid in form, with a temperature of 40° C. (104°).

Discussion on Renal Hæmorrhage without Lesions of the Kidney. Berlin Society of Physicians.—*The Medical Week*, 1896, p. 598.

Dr. Klemperer stated that many cases had been recorded of renal hæmaturia without kidney lesion, and his own observations showed that after riding on horseback or cycling such hæmorrhage might occur. It may be hæmophilous or angioneurotic. Surgical measures should not be resorted to until all medical means have been exhausted. Prof. von Leyden agreed and considered hydrotherapy the most important of such means. Dr. Mendelsohn had seen renal hæmaturia set up by severe muscular effort and by oxaluria. Prof. Fürburger had met with a case in

which hæmaturia occurred every time the patient rode on horseback and disappeared by the following day. Dr. Mankiewicz referred to a young man who developed copious hæmaturia after his first military march; it occurred several times but ultimately disappeared altogether. Prof. Renvers had seen a case in which hæmaturia developed after riding on horseback, and a relative of the patient suffered in the same way after a carriage drive. Prof. Senator had met with four or five cases of hæmaturia in military officers after a prolonged ride. Prof. Ewald had observed a case of hysterical renal hæmaturia.

MISCELLANEOUS.

Figueira, F. *An Essay on Clinical Urology in Childhood.*—*The Lancet*, 1897, vol. ii., p. 737.

This essay is in reality a compilation of a great deal that has been written in modern times on the urine during infancy and childhood. It is impossible to abstract what is itself an epitome, but it is worthy of notice as a convenient storehouse of much useful information.

Nicolaysen and Escherich. *Diurnal incontinence of urine and grave anæmia consecutive to Colibacillary Cystitis in children.*—*The Medical Week*, 1896, pp. 584 and 597.

The authors draw attention to cystitis and pyelonephritis in children due to infection of the bladder by the bacillus coli as a cause of diurnal incontinence of urine and grave anæmia. The treatment consists in warm antiseptic irrigation of the bladder combined with intestinal antiseptics.

Gilbert and Grenet record a case of acute cystitis in a patient aged 19. According to Trumpp and Hutinel, the bacillus passes directly from the intestine to the bladder, but the greater frequency of the affection in women suggests that in some cases it passes by the urethra.

Haig, A. *Some effects of diet on the excretion of Uric Acid.*—*Brit. Med. Journ.*, 1896, vol. ii., pp. 915, 1571, 1746, and 1853.

Dr. Haig believes that uric acid is introduced into the body in food which contains xanthin compounds, or the alkaloids

of tea, coffee, or cocoa, which "are similar xanthin compounds." Consequently he allows no other animal foods except milk and cheese, and forbids these beverages.

Dr. Freyer asked the author how it happened that in the north-west of India and the Punjab, where the native's diet was exclusively composed of cheese, milk, pulse, lentils, rice, etc., stone was so common. Dr. Haig answered this eventually by a quotation from the report of the Deputy Sanitary Commissioner of the North-western provinces to the effect that "among the poorly nourished rice-eating population stone is rare, but among the wheat-eating, meal-eating, and generally better fed provinces it is frequent." Dr. Freyer replied in due time that Surgeon-Colonel Keegan on being shown the above extract said "he had never seen so many mistakes in so small a compass!"

Goodbody, F. W. *The action of Lysidine and Piperazine as uric acid solvents.*—*Brit. Med. Journ.*, 1896, vol. ii, p. 951.

Dr. Goodbody has made a number of experiments with piperazine and lysidine which show that both prevent the precipitation of uric acid, lysidine being the more powerful solvent, and when taken internally they increase the elimination of nitrogen as urea and uric acid, by acting as diuretics, and also, apparently, by "rendering the blood more capable of removing uric acid from the tissues."

Swain, J. *The effect of the Roentgen rays on urinary and biliary calculi.*—*The Lancet*, 1896, vol. ii, p. 1631.

In view of the great difficulty that is not uncommonly experienced in correctly diagnosing the presence of a renal calculus, and the very numerous instances in these days of active surgery in which the kidney has been explored without finding a calculus, it is satisfactory to know that assistance may be derived from skiagraphy, Dr. Swain mentioning three cases in which the presence of a calculus in the kidney was shown by this means.

REVIEWS.

YEAR-BOOK OF THE SCIENTIFIC AND LEARNED SOCIETIES OF GREAT BRITAIN AND IRELAND.*

WE have received the fourteenth annual issue of the Year-Book of the Scientific and Learned Societies of Great Britain and Ireland. This volume, like its predecessors, contains a complete list of these societies, together with a concise review of their history, organisation, and conditions of membership, and further gives a record of the work done by each during the past year. The societies are grouped together according to the science or art to the furtherance of which their labours are devoted, and reference to them is therefore readily made; and the fact that for the most part they have themselves supplied the published information, is a guarantee of its accuracy. The publication should have a wide circulation.

THE EDINBURGH MEDICAL JOURNAL.†

WE have to acknowledge the receipt of vol. i. of the New Series of the Edinburgh Medical Journal, consisting of the six numbers which have appeared from January to June of the current year collected into a single volume. The book is well-printed and handsomely bound, and the leading position of the Journal, and the great interest and variety of its contents make it a valuable and attractive one.

* Year-Book of the Scientific and Learned Societies of Great Britain and Ireland. Compiled from Official Sources. Fourteenth Annual Issue. London: Charles Griffin and Company, Limited. 1897.

† The Edinburgh Medical Journal. Edited by G. A. GIBSON, M.D., F.R.C.P. Ed. New Series, vol. i. Edinburgh: Young J. Pentland. 1897.

INTERNATIONAL MEDICAL CONGRESS.

MOSCOW, AUGUST 19TH-26TH. 1897.

WE have received full particulars of the various routes by which intending members may travel to Moscow, and at the request of the Secretaries beg to call attention to a few of the most important points.

A choice of five routes is open to members, the first two of which after arrival at Flushing are entirely overland, the three others involving a voyage by sea over nearly the whole route.

Route A.—Overland to Moscow, via Flushing, Berlin, and Warsaw. Approximate time of journey, 84 hours. Total return fares, £18. 11s., first class; £12. 7s. 1d., second. An extra £4 may be added for cost of meals, etc., whilst travelling.

Route B.—Overland, via Flushing, Berlin, and St. Petersburg. Approximate time as in Route A. Total cost: £25 to £30, first class, or £20 to £25, second, including cost of living on the journey.

Route C.—Direct by sea from London or Hull to St. Petersburg, and thence by train to Moscow. Return fare by steamer, £7. 17s. 6d.; charge for meals, 6s. 6d. per day. The railway fares are from £3 to £4. The time required will be about a week.

Route D.—By sea from Hull to St. Petersburg or Helsingfors; thence by train to Moscow. The cost of this route will be a little less than that by Route C.

Route E.—By sea from London, Hull, or Grimsby, to Gothenburg; thence by train or canal to Stockholm; thence by sea to St. Petersburg, and on to Moscow by train. Cost of return journey from £14. 18s., exclusive of meals, which will cost an extra £5. Time, from 7 to 8½ days.

All the above estimates are likely to be somewhat diminished owing to certain special concessions obtained from various railway companies since the circular has been drawn up.

Passports will be required by all routes.

New Books, etc., Received.

A Short History of Aryan Medical Science. By H. H. SIR BHAGVAT SINGH JEE, K.C.I.E., M.D., D.C.L., LL.D., F.R.C.P.E., Thakore Saheb of Gondal. London: Macmillan and Co. 1896.

Strophanthus: a Clinical Study. By REYNOLD W. WILCOX, M.D., LL.D., Professor of Medicine and Therapeutics at the New York Post-graduate Medical School and Hospital; Physician to St. Mark's Hospital.

Origin of the Vertebrates. By STUART JENKINS.

Sixty-second Annual Report of the British Medical Benevolent Fund. 1896.

Primary Sarcoma of the Lachrymal Caruncle, with the Report of an Additional Case. By C. A. VEASEY, M.D., of Philadelphia.

The Edinburgh Medical Journal. Edited by G. A. GIBSON, M.D., F.R.C.P. Ed., New Series, Vol. i. Edinburgh and London: Young J. Pentland. 1897.

Excretory Irritation, and the Action of Certain Internal Remedies on the Skin. By DAVID WALSH, M.D. Edin., Physician, Western Skin Hospital, London, W.; Clinical Assistant, Blackfriars Skin Hospital. London: Baillière, Tyn dall, and Cox. 1897.

When Shall We Operate for Cholelithiasis? By CARL BECK, M.D., Professor of Surgery in the New York School of Clinical Medicine, Surgeon to St. Mark's Hospital, etc.

A Case of Hermaphroditism (?). By CARL BECK, M.D.

The Surgical Diseases of Children. By EDMUND OWEN, M.B., F.R.C.S., Senior Surgeon to the Hospital for Sick Children, Great Ormond Street; Senior Surgeon to, and Lecturer on Surgery at, St. Mary's Hospital, etc. Illustrated. Third Edition, Revised and Enlarged. London, Paris, and Melbourne: Cassell and Company, Limited. 1897.

The British Realms. June, 1897.

De l'Ouverture Large de la Caisse, et de ses Annexes. Par le Dr. E. J. MOURE, Chargé de cours à la Faculté de médecine de Bordeaux. Bordeaux: Ferret et Fils. Paris: Octave Doin. 1897.

Archives of Skiagraphy. April, 1897.

Manual of Bacteriology. By ROBERT MUIR, M.A., M.D., F.R.C.P. Ed., Lecturer on Pathological Bacteriology, and Senior Assistant to the Professor of Pathology, University of Edinburgh; Pathologist, Edinburgh Royal Infirmary; and JAMES RITCHIE, M.A., M.D., D.Sc., Lecturer in Pathology, University of Oxford. Illustrated. Edinburgh and London: Young J. Pentland. 1897.

Burdett's Hospitals and Charities. 1897. Being the Year Book of Philanthropy. By HENRY C. BURDETT. London: The Scientific Press, Limited.

Notes on Malaria in Connection with Meteorological Conditions at Sierra Leone. By Surgeon-Major E. M. WILSON, C.M.G., lately Senior Medical Officer at Sierra Leone. London: H. K. Lewis. 1897.

Lectures on the Action of Medicines, being the Course of Lectures on Pharmacology and Therapeutics, delivered at St. Bartholomew's Hospital during the Summer Session of 1896. By T. LAUDER BRUNTON, M.D., D.Sc. Edin., LL.D. Hon. Aberd., F.R.S., F.R.C.P., Physician and Lecturer on Pharmacology and Therapeutics to St. Bartholomew's Hospital, etc. London and New York: Macmillan and Company. 1897.

The Action of Taku-Diastase in various Gastric Disorders. By JULIUS FRIEDENWALD, A.B., M.D., Clinical Professor of Diseases of the Stomach, College of Physicians and Surgeons, Baltimore.

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ORIGINAL COMMUNICATIONS.

PRACTICAL SUGGESTIONS FOR THE MORE
SYSTEMATIC FEEDING OF INFANTS.

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THE purpose of the present communication is to emphasise the importance of more exact methods of infant-feeding. As things are, no exact method is generally followed, and no exact guidance is easily available. Everyone of experience has his own particular views on the subject, which are exclusively based upon empirical observations, and arrived at by very inexact and imperfect methods. There can be little doubt that the time has come for the substitution of more exact methods on the lines of those which have already been adopted elsewhere with conspicuous success. It is only by the adoption of some such course that we can advance our knowledge of practical dietetics, or manage to escape from the domination of manufacturers of infant foods, which are often exploited more in the interests of the producer than in those of the consumer. It must be of course conceded that the conditions of successful nutrition are far too complex and subtle to admit of rigid and uniform procedure. But if rational feeding has nothing in common with inflexible rule, it should equally steer clear, on the other hand, of hopeless confusion and uncertainty, and, though we cannot as

yet penetrate many of the mysteries of nutrition, we can do a good deal more than is now attempted in the direction of greater accuracy.

It cannot be too frequently repeated that the most trustworthy indication of suitability of food, and of proper nutrition, is progressive increase in weight; and it is greatly to be desired that periodical weighings at regular intervals (not exceeding a week in the case of young infants) should be generally practised. As is well known, infants always lose weight for the first few days of life. Until the disappearance of colostrum from human milk, it will be usually found that the child is imperfectly nourished, and consequently loses weight. Under ordinary circumstances the colostrum disappears by the end of the first week, or very soon afterwards, and by this time the child has generally lost at least half a lb. from its original weight. But the loss is soon made up again, as the mother's supply of milk improves in quality and quantity; and the subsequent gain—whether rapid or slow—should be steadily progressive from this point. For the first two or three months the weekly gain should *at least* be equal to 5 ozs. If it is below this, it is pretty sure that trouble is brewing, and, if at the same time, the bowels are acting irregularly, if the motions are offensive in any way, or if there be frequent vomiting, you may conclude that mischief has already begun, and that the diet requires prompt attention. I especially urge the importance of weighing observations, as a means of *anticipating* dyspeptic trouble—inflammatory or otherwise. The majority of really serious difficulties in infant feeding, instances of which are of such common occurrence, taxing our resources to the very utmost, arise from persistence with unsuitable food, long after the fact might have been established by any intelligent person, had regular observations of the weight been made.

Maternal feeding.—Though breast-feeding is undoubtedly free from many of the risks inseparable from hand-feeding, it is none the less true that human milk varies widely in composition according to the health of the mother, her habits of life and temperament; and cases are by no means infrequent in which

it does not properly maintain the nutrition of the child, or in which it gives rise to obvious digestive disturbance. Under these circumstances our first duty should be to ascertain the composition of the milk supplied by the mother. With this end in view, some sort of standard is necessary by which the results of an examination may be compared. I submit the following figures, as representing the average results of the best analyses obtainable:—Reaction, slightly alkaline; sp. gr., 1030 1032; total solids, 12 to 13 per cent.; fat, 3 to 4 per cent.; proteids, 1 to 2 per cent.; sugar, 6 to 7 per cent.; ash 2 per cent.

In all cases in which it is available, a laboratory analysis should be made, and with the establishment of clinical research laboratories in various parts of the country, and with the opportunities afforded by various analysts, this is now neither a difficult nor expensive matter. It is much to be desired that the practitioner should be provided with some ready method by which he could roughly ascertain the composition of human milk in his own surgery. Unfortunately no such method is at present available, but my friend Mr. Richmond, Analyst to the Aylesbury Dairy Company, is working at the subject, and hopes before long to be in a position to offer some easy method sufficient for all practical purposes. Hitherto I have adopted the plan suggested by Professor Holt, of New York, which proceeds upon the assumption that, given the sp. gr. and the percentage of fat (both of which are easy to determine), it is possible to roughly estimate the percentage of proteids. Mr. Richmond and I have recently analysed no fewer than 94 samples of human milk, and our results show that very little reliance can be placed upon Holt's method, and so I have given it up. I may say, in passing, that our analyses have furnished some interesting results which before long we hope to publish in a joint paper on the subject.

I have devoted a good deal of attention of late years to determine the limits within which it is possible to influence the composition of mother's milk; but much further investigation is needed before these limitations can be exactly defined. Speaking

generally, the total quantity of milk may be increased by rest, and a liberal allowance of fluid nourishment. There is no more frequent cause of deficiency than exhaustion from over-work, and especially over-work in association with worry. It simply comes to this, that a mother who is suckling a child has to make it her first care, and successful lactation is incompatible with busy domestic and social engagements. In this connection a special caution is necessary with regard to the need of a sufficiency of sleep at night; and with this end in view, it is most desirable that a child should only be suckled once between the hours of 10 p.m. and 5 a.m. until it reaches the age of three to four months, after which age all night-feeding should be discontinued.

Over-feeding on the part of the mother results in a milk in which both fats and proteids are in excess, especially when this is combined with too little exercise in the open air. It would appear that the fat is more influenced by the feeding, and the proteids by the amount of exercise. Thus, when the fat is deficient, more nourishing food, and especially a more liberal allowance of meat, is necessary; and, when fat is in excess, a contrary course is indicated. A deficiency of proteids, on the other hand, calls for less exercise and more rest; while an excess of proteids demands increased exercise. It is scarcely necessary to point out that the amount and character of the exercise requires careful adjustment to the physical strength of the mother, for if carried to the extent of fatigue it will defeat the very object for which it was intended.

It has also been ascertained that the density of human milk is affected by the intervals of suckling. Short intervals tend to increase the density of milk, while longer intervals tend rather to dilute it. In some cases you will find it very difficult or impossible to bring an imperfect milk within the limits of normal composition; and, in my experience, one of the most hopeless situations is that of a highly nervous and emotional mother, who cannot or will not control and regulate her feelings.

Turning now to the subject of artificial feeding, it savours

much of the common-place to point out that Nature provides a standard food, in the shape of healthy human milk, which it seems only right and reasonable to copy as closely as we can. But this trite fact appears to be sometimes overlooked, for, quite apart from the numerous instances of diets framed in complete ignorance of an ordinary child's requirements, only quite recently, Professors Budin and Chavane, of Paris, have advised a diet of undiluted sterilised cow's milk as a desirable substitute for human milk, and have supported their statements by many records of success. It is perhaps a little unfair to criticise a system which I have not personally tried, but I regard such records merely as a testimony to the remarkable power possessed by many infants of adapting themselves to an unnatural food, when carefully handled; and I am reluctant to admit that a food which contains twice as much nitrogenous matter as a child naturally requires—to say nothing of other wide deviations from Nature's type—is either suitable or desirable as the diet of an average child.

It is practically unquestionable that the best, cheapest, most trustworthy, and most readily accessible substitute for human milk is cow's milk; always provided it is of good quality and pure. These conditions turn primarily on careful selection and good management of the cows from which the milk is obtained. I cannot discuss this subject now, but all will agree that there is abundant room for improvement in the tending and grooming of cows, and in the conditions under which they are housed and kept; though changes have taken place of late years which tend to diminish the risks of contamination of milk from this cause.

In one important particular, however, there is pressing need of reform, namely, in precautions with a view of preventing the use of cows suffering from tuberculosis. The communication of tuberculosis to human beings through the medium of milk derived from tuberculous cows is now a pretty well established fact. We are also in possession of a most delicate vito-chemical test for the recognition of this disease in cows, by means of

inoculation with Koch's tuberculin. Professor Rotch estimates that in America, at least 3 per cent. of the cows that are used for milking are tuberculous ; and, if this be only approximately true, legislation is urgently needed to enforce such inoculation under skilled official inspection, and to prevent the use of infected cows for the purpose of milking.

But, assuming that the milk is good and pure, dirty extraneous matters are bound to get into it during the process of milking, and in the interval which elapses before its arrival at the dairy ; and therefore before it is supplied to the consumer it must be cleaned. This is accomplished by passing it through a separator, and after seeing the stuff which is removed from even high-class milk by this means, it is not difficult to infer the desirability of its removal in the interests of infant-feeding.

The average composition of cow's milk works out as follows :—
Reaction, slightly acid ; sp. gr., 1033 to 1029 ; total solids, 13 to 14 ; fat, 3.5 to 4.5 per cent. ; sugar, 4 to 5 per cent. ; proteids, 3 to 4 per cent. ; ash, 7 per cent. In large dairies, where milk is obtained from a large number of cows, the composition of the mixed milk is remarkably constant in all essential particulars. According to the experience of the Aylesbury Dairy Company, the proteids rarely fall below 3.2 per cent., or exceed 3.6 per cent. The fat is a little more variable, and is about .5 per cent. more abundant in the winter than in the summer. Other things being equal, therefore, mixed milk from a good dairy is preferable to milk obtained exclusively from one cow. At any rate in the latter case, the milk should be analysed from time to time, in order to keep in touch with possible variations in its composition.

Bearing in mind the fact that the proteids of cow's milk are largely in excess of those of human milk, it is obvious that, if we are to conform to the type afforded by human milk, some dilution is necessary. While the principle of dilution is generally admitted, opinions differ as to the best diluent. It is very doubtful whether any diluent is superior to plain boiled water—at least when dealing with plain boiled or sterilised milk.

Personally, I have been so well satisfied with thin barley-water, that, although I am unable to actually demonstrate its superiority, I continue to employ it.

While we can obtain a proper per-centage of proteids by means of dilution, it must be remembered that all the constituents of the milk are similarly diluted, and that thus the amount of fat and sugar are reduced considerably below the requirements of a child's nutrition. The deficiency in sugar is habitually made good by artificial sweetening with cane-sugar, but the deficiency in fat is far too often disregarded, especially amongst the poor. Yet it is a fact that with a deficiency of fat the general nutrition of a child greatly suffers, its power of resisting the depressing effects of cold is diminished, constipation is encouraged, and a strong disposition to rickets is created. In general terms then, some addition of cream to diluted milk is absolutely essential: but, owing to the extremely variable composition of cream as delivered to the public, it is impossible to determine exactly what amount should be added, without chemical analysis, which, for practical reasons, is seldom available.

These considerations show how difficult it is in actual practice to obtain and secure the adaptation of cow's milk to infant requirements with any degree of exactness or regularity, and hence the necessity of some better and more trustworthy means of preparation. We have all read of the admirable milk laboratories which have been established in some of the cities in the United States, by means of which it is possible, at comparatively trifling expense, to obtain a regular supply of milk for infant feeding, prepared according to any formula desired by the practitioner. Under these circumstances the milk is prescribed with the same attention to the amount of constituent ingredients as a medicinal prescription. Some may regard this as a pedantic counsel of perfection; but, in view of the great interests at stake, and the enormous sacrifice of infant life, directly or indirectly caused by faulty feeding, it is surely a new departure worthy of all the encouragement which we as a profession can possibly give it.

Unfortunately, no such milk laboratories are available in this country, but with the resources at our disposal a great deal more accuracy might be observed in the modification of cow's milk for infant feeding than is generally attempted. In almost all large towns—and it is just in these crowded centres that need for careful infant feeding is most urgent—there are one or more dairies, where cream separators are in use. By adjusting the two pipes for the delivery from the separator of cream-milk and skimmed-milk respectively, the proportion of cream in the cream-milk may be controlled with sufficient accuracy for practical purposes. The plan I adopt myself and recommend to others, is so to adjust these two pipes of the separator, that they deliver equal quantities in equal times, and only employing that which is delivered from the cream-pipe, the average composition of which will be, Fat, 8 per cent., and Proteids, 3·6 per cent. This is a most convenient strength for dilution, as the accompanying tables will show, and is well adapted for feeding infants up to 6 or 7 months of age. After this age, whole milk is preferable, with the addition of a small quantity of cream to each bottle, if it be thought desirable to dilute it.

TABLE I.

Age of Child.	Suggested Dilution.			Composition.	
1st week	...	{	3 parts water	...	Fat 2·0 per cent.
	...	{	1 part milk	...	Proteids '9 "
2nd week	...	{	8 parts water	...	Fat 2·2 "
	...	{	3 parts milk	...	Proteids 1·0 "
3rd week	...	{	7 parts water	...	Fat 2·4 "
	...	{	3 parts milk	...	Proteids 1·0 "
1 month	...	{	2 parts water	...	Fat 2·6 "
	...	{	1 part milk	...	Proteids 1·2 "
3 months	...	{	3 parts water	...	Fat 3·2 "
	...	{	2 parts milk	...	Proteids 1·4 "
5 to 6 months	...	{	equal parts of	...	Fat 4·0 "
	...	{	water and milk	...	Proteids 1·8 "

Dr. Rotch has suggested the setting aside of milk to stand for a definite time, under as uniform conditions of low temperature as possible, in a large glass jar, and then separating the sub-jacent milk from the cream by means of a syphon. He says that, by this means, a cream may be obtained of a tolerably uni-

form composition of 10 per cent. fat, and that by adding this in definite proportions to the skim-milk syphoned off, any required result may be approximately obtained. Mr. Richmond and I have made a number of experiments with this method, and our results show that no reliance can be placed on the percentage of fat in the cream which rises in this way. In our hands it varied from minimum of 7 per cent. fat, with sterilised milk, to a maximum of 16 per cent. fat with unsterilised milk.

A much better way than this, but not so accurate as the one I have recommended, is that suggested by Dr. Ashby of Manchester. A glass bottle, provided with a stop-cock at its lower end, is graduated to 15 and 30 oz. respectively; and, after being filled to the upper mark with new milk, has its mouth plugged with cotton wool. After standing two hours at the ordinary temperature of a room a certain amount of cream rises to the upper part of the bottle. The stop-cock is now opened and the lower 15 oz. is withdrawn and replaced by a 7 per cent. solution of sugar. The mixture is then sterilised, and afterwards rapidly cooled. If the milk used is of good average quality, the mixture will have the following approximate composition: fat, 2 per cent.; proteids, 1.7 to 2 per cent.; sugar, 5 to 6 per cent. If rather a higher percentage of fat is required the milk should stand for a longer period than two hours before being withdrawn.

When you can get a dairy to supply you with skim-milk containing 3 per cent. of proteids, and cream of a definite and fixed composition of 10 per cent. of fat, it is possible to build up a milk of any percentage composition you desire. I have arranged for this in Birmingham, and practitioners are now able, at a very moderate cost, to obtain milk and cream properly prepared of this strength and sterilised in vacuum bottles.

My reason for selecting a skim-milk containing 3 per cent. of proteids is first, because it is a strength easy to calculate for mixing purposes; and secondly, because I find that the 10 per cent. cream approximately carries off this percentage of proteids as it leaves the separator, and thus the strength of proteids is

uniform throughout. It is true that the skim-milk contains just a trace of fat, but not sufficient to seriously disturb the calculations.

TABLE II.

Age.	Formula.	Proportion per Pint.	Quantity.
1 week ...	{ P. 0.75 F. 2.0	Skim-milk 1 oz. } Cream 4 oz. }	10 oz.
2 weeks	{ P. 1.0 F. 2.5	Skim-milk 1½ oz. } Cream 5 oz. }	15 oz.
3 weeks ...	{ P. 1.0 F. 3.0	Skim-milk ½ oz. } Cream 6 oz. }	20 oz.
4 to 6 weeks	{ P. 1.2 F. 3.5	Skim-milk 1 oz. } Cream 7 oz. }	25 oz.
6 to 8 weeks	{ P. 1.5 F. 3.5	Skim-milk 3 oz. } Cream 7 oz. }	28 oz.
2 to 4 months	{ P. 1.5 F. 4.0	Skim-milk 2 oz. } Cream 8 oz. }	30 oz.
4 to 5 months	{ P. 2.0 F. 4.0	Skim-milk 5 oz. } Cream 8 oz. }	35 oz.
5 to 6 months	{ P. 2.5 F. 4.0	Skim-milk 8½ oz. } Cream 8 oz. }	38 oz.
6 to 8 months	{ P. 3.0 F. 4.0	Skim-milk 12 oz. } Cream 8 oz. }	40 oz.

The above table shows the amount of cream and skim milk which, with a diluent added to make up one pint, are needed to obtain a milk corresponding with the formula required. Thus, taking formula No 5, which most nearly represents the composition of average human milk, 7 oz. of cream, 3 oz. of skim-milk, and 10 oz. of thin barley-water will be required. The first column in the Table represents the age for which, on the average, the various formulæ are adapted. The fourth column shows the daily average quantity of food to be given at each age. I wish to lay especial stress upon the small quantities of food (and dilute food too) which are advised for the first few weeks of life. You will observe that they are much smaller than those which are frequently allowed to children of this age. My own experience teaches me that this is one of the commonest mistakes, and that in this way the foundations are laid of a dyspepsia which is an endless source of trouble and anxiety later on. It is far better to give too little than too much at this tender age.

It should be remembered that cow's milk is almost invariably acid in reaction, quite independently of any fermentative change. This acidity, like that of the urine, is probably due to acid-phosphates. The phosphates of human milk, Mr. **Richmond** tells me, are all tri-basic, and these yield an alkaline reaction. The acidity of cow's milk is not altered by boiling, for I find that exactly as much alkali is necessary to neutralise it as in the raw state. If it is desirable to neutralise this acidity by means of lime-water—and most authorities say that it is—much larger quantities must be used than we commonly do, namely, from two-fifths to three-fifths of the quantity of milk employed. Thus, for formula 5, at least 5 or 6 oz. of lime water would be necessary. If this be acted upon, of course a corresponding deduction must be made from the amount of added diluent. When more lime water is added than is necessary to neutralise the milk, and the milk is afterwards heated, the excess of lime is thrown down, and the milk returns to the neutral state. As a matter of fact, however, milk should never be boiled after the addition of lime water, or of any alkali, for under these circumstances the food acquires an unpleasant dirty colour.

I need say little or nothing about the sweetening of the food, beyond a caution not to add too much sugar. The milk should be just pleasantly sweet, and that is enough. Some authorities, it is true, advise milk sugar instead of ordinary cane-sugar; but so far as I am aware there is no clear evidence of its superiority.

Just a word or two in conclusion as to Pasteurisation and Sterilisation of milk. By Pasteurisation I mean submitting the milk to a temperature of 158° F. for 20 to 30 minutes. This temperature is sufficient to destroy all fermentative germs, though it does not enable milk to be kept fresh longer than about three days. The albumen of milk is not coagulated, and it has not the flavour peculiar to boiled milk. I find that as soon as this temperature is exceeded the boiled flavour begins to appear. Sterilised milk is germ free and keeps indefinitely. I now believe that sterilisation does not render milk less digestible, though I have not always held that view. On the contrary, the

milk clot is looser and less coherent, and more readily digested than the clot of raw milk. Thus, to take one of my experiments amongst others—while the dried clot of raw milk lost only 25 per cent. of its weight on artificial digestion, the dried clot of sterilised milk lost 32 per cent. of its weight. Sterilisation has a tendency to make the fat sometimes run into oily masses, and when this happens it is quite possible that the stomach may not tolerate it so well as in the natural emulsion. Excellent apparatus are now in the market for Pasteurising milk, at a low cost. It should be borne in mind that milk should always be quickly cooled after either Pasteurisation or Sterilisation.

LEPROSY.

BY A. DOUGLAS HEATH, M.D. LOND.

No description of leprosy, however brief, can be placed before us without raising at the outset some thoughts concerning its high antiquity as a well known scourge of mankind, and exciting in students of historical medicine an interest perhaps greater than that called forth by any other disease. I believe that the kindred branches of Obstetrics and Gynæcology can lay claim to the distinction of having the earliest written medical records (Egyptian papyri 2,000 B.C.) dealing with the detection of pregnancy and other equally interesting subjects, but as these sciences at this time consisted largely of invocations to the gods and experimental therapeutics with such external remedies as camel's dung and the urine of the same animal mixed with dates, their results were neither useful nor informing. Leprosy, on the other hand, received in the writings of Moses, who had been carefully instructed in the arts and sciences then in possession of the Egyptian priesthood, a careful and accurate treatment, pains being taken to define the symptoms and appearances of the disease as fully as possible, and measures being enforced to

prevent its spread. There is no doubt that in the time of Moses, who probably lived from about B.C. 1371 to B.C. 1251, leprosy was very prevalent in Egypt as well as in Palestine and Syria, and it seems evident, from the prominence given to the descriptions of the disease by him, it was spreading rapidly in the tents of the Hebrews and the shepherd races who accompanied them out of Egypt, and measures to check its ravages were urgently needed.

The early Greek medical writers, with wonderful powers of observation and description which make translations of their works so readable and interesting even at the present day, had probably many opportunities of studying the disease, as it was certainly rife in the islands of the Greek archipelago if not on the mainland of Greece itself. The Greeks used the terms Elephantiasis and Lepra for the disease, and the former has persisted to the present day, but to distinguish it from other forms of enlargement, *i. e.*, Elephantiasis nostrus and Arabum it is now called Elephantiasis Græcorum. Celsius however draws a distinction between the terms Lepra and Elephantiasis, using the former evidently for Psoriasis and other skin diseases, and reserving the latter for true leprosy, which at his time was certainly rare in Italy.

There is abundant evidence that leprosy has existed in India, China, and Southern Asia for centuries before the Christian era, and although no records of the New World exist before its discovery and partial colonisation by the Spaniards, the recent unearthing of baked clay figures with a marked leontine expression of face in the ancient ruined cities of central America makes it probable that the disease was prevalent amongst those races whose evidences of civilization are quite as remarkable as those of the ancient Egyptians, but for whom no talisman like the Rosetta stone has as yet been found to throw light on an unknown chapter of the world's history. Although leprosy has thus been from the earliest times very prevalent in some hot countries it has not been confined to these as it has existed for centuries in the north of Europe, and from the 10th century to

the present time historical records exist showing no country in Europe has been free from it, and it has at all times engaged the attention of lawgivers and pioneers in hygiene. In the middle ages in this country and France lazaret houses were founded by charitable individuals for the reception of lepers, and these may even now be seen in some of our older cities converted into almshouses, as their former uses are no longer required. Happily, however, the day is long past when groups of lepers were not uncommon sights in this country, and it is certainly a rare thing now for anyone to have the opportunity of seeing a case of leprosy unless he travels abroad. Leprosy nevertheless may be seen from time to time in Englishmen and women who have contracted the disease abroad and who have occasionally returned to this country in an early stage of the malady and before any very characteristic signs have made their appearance.

In the hospitals in London where foreigners are frequently coming under treatment, and in some of the Scotch and north of England ports, especially those trading with Iceland, one or two cases are probably seen every year, and the number of lepers in the United Kingdom is probably larger than is generally supposed, as patients in good circumstances naturally seclude themselves with the greatest care.

My reason for selecting such an uncommon disease as leprosy as the subject of this paper is based on the fact that, although my experience of the disease depends on only one example, that case was of such a nature that all the principal signs and symptoms of leprosy were manifested, and I had the opportunity of watching the course of the disease for more than three years, and until the patient finally died.

At the present time leprosy has a very wide distribution, being met with in every quarter of the globe. In Europe it is most common in Norway, Iceland, Crete, and Cyprus, but there are small groups of lepers in Brittany, Malta, North Prussia, and elsewhere. In India, China, Japan, the Malay peninsula, the Cape of Good Hope, Egypt, the West Indies, Mexico, Central and parts of Southern America, it is still common, and in the

Sandwich Islands it has rapidly increased of late years, there being at the present time quite a large colony of lepers at Honolulu. European leprosy is naturally the most interesting to us, though it does **not** differ in any way from the disease seen in other parts of the globe, and it is in Norway and Iceland that the best observations on leprosy have been made from the large number of lepers in the State hospitals of the former country, which has enabled the Medical Inspectors of these institutions to publish statistics dealing very fully with the different clinical aspects, the various modes of death, and the pathological changes seen in the organs in leprosy.

Leprosy, except in comparatively recent times, has not received as full attention as other diseases, either from a horror of contagion probably instilled in the mind from biblical accounts of the disease, or from the fact that a leper from the earliest times has generally been an outcast from the abodes of other men. During the last fifty or sixty years, however, a large number of contributions to our clinical and pathological knowledge of leprosy have been made by Danielsenn, Hansen, Hebra, Beaven Rake, Unna and others, and it is probable that more is now known about the pathology of leprosy than of almost any other disease. Hebra long ago classed leprosy alongside of lupus and thought that both were possibly due to a similar bacillus. His prognostications were fulfilled in 1871 by the discovery of a bacillus closely resembling the tubercle bacillus in the leprous nodules by Hansen, and more recently these bacilli have been found in the lymphatic glands, nerve sheaths, liver, spleen, lungs, blood and cornea. Still more recently the disease has been successfully communicated to animals.

The classification of the different clinical varieties of leprosy is a difficult matter, as one variety of the disease may co-exist with or be followed by another, but the most useful sub-division and that supported by pathological results, is the one which recognises two main groups, the *Nodular* or tuberculated, in which the skin is prominently involved, and the *Anæsthetic* in

which nervous symptoms predominate. Hansen would prefer to call this second group the Maculo-anæsthetic, from the fact that a macular or only slightly raised erythema-like eruption of the skin precedes the onset of the peripheral neuritis, or may be prolonged after nervous symptoms have been already noticed. To these two main groups may be added a third into which mixed cases of the other varieties may be placed. Anæsthetic leprosy may be followed by paralysis and mutilation of the limbs, and this state used to be classified as another form of the disease, *i.e.*, Mutilating Leprosy, the *lepra melas* of the Greeks and the black leprosy of the middle ages. It is now known to be simply a more intense form of the nervous variety of the disease.

The onset of leprosy is as a rule very insidious, and there is often with the appearance of the macular eruption, which is so frequently the first sign of the disease, no constitutional disturbance whatever. In a considerable number of cases, however, there is a little feverishness and malaise, but the temperature does not commonly rise above 100° F. or 101° F., and usually falls rapidly, leaving the patient apparently in his usual health. The outbreak of the eruption often extends over a considerable space of time, fresh patches appearing from time to time, and the patient may even have outbreaks of Leprous Erythema after nervous phenomena have been noticed in the limbs, as happened in my case, or much more rarely after nodules have developed in the skin. The eruption is most frequently seen on the forehead, chin, ears, cheeks, and extensor surfaces of the limbs, but sometimes the whole body, except the palmar and plantar surfaces and the hairy scalp is involved, and when this is the case the erythema usually appears suddenly, and when present in Europeans has been mistaken for sunburn. The eruption itself consists of patches and rings of a red-brown colour, varying in size from that of a pea to an area as large as the palm of the hand. In the ring form, which is most frequently seen on the trunk and limbs, and furnishes perhaps one of the most characteristic appearances of leprosy, a pale area of

skin exists in the centre of the hyperæmic patch and is generally anæsthetic, whilst the darkly-coloured zone around it is sometimes hyperæsthetic and sometimes anæsthetic. Both the patches and rings have at first a sharply defined margin, but they are never distinctly raised above the surface of the skin, and as time goes on their edges become more and more indefinite. No falling out of the hair occurs over these areas, and in this way they differ from the nodular eruption of leprosy as this invariably leads to a local alopecia. A thickening of the erythematous patches next takes place, particularly on the face, hands, and feet, and large dusky red pigmented plaques are formed by the coalescence of neighbouring patches. This gives a bloated appearance to the features and causes a uniform enlargement of the ears and often great increase of bulk in the lower part of the legs, feet, forearms, and hands (Elephantiasis). On the feet and hands and adjacent portions of the limbs there is generally very marked epithelial development and huge scales are frequently thrown off, the nails also are often shed, and slowly-healing whitlows and ulcers are common.

My own patient, except that he had no macular eruption on the trunk, showed all the above changes very plainly. The forehead, nose, and chin were deeply pigmented and thickened with leprous infiltration. The ears were enormously enlarged, the increase in bulk being due to an affection of the whole ear and not simply, or especially of the lobule. Over the hands and feet, also very much increased in size, a very great over-production of epithelium was at the same time visible, and I have on two or three occasions removed a thick epithelial cast of the whole of a finger. In a good many cases of leprosy the disease stops short at this stage, the patient showing a spotted and mottled eruption over the whole body, which is now known to be due to a bacillary invasion of small cutaneous nerves, but others still progress and develop trophic changes and are usually grouped together under the name Anæsthetic Leprosy.

Having thus briefly described the exanthem stage of leprosy, which is so closely allied by its mode of origin to the nervous

variety of the disease, it will be well to mention some of the chief characteristics of Nodular or Tubercular Leprosy, and afterwards to return to the subject of leprous neuritis.

Nodular Leprosy is distinguished by the appearance of nodules (lepromata) of a yellowish brown hue in various portions of the skin of the body. These tumour-like nodules commonly appear very early on the face and are most frequent in the skin of the forehead, eyebrows, nose, and cheeks. In the ears also nodules are very often seen causing sometimes great enlargement of the lobules, and in my own case, which was of the mixed variety of leprosy, besides the uniform enlargement of the ears, large nodules appeared in the lobules before they were visible elsewhere; and at one time before ulceration occurred in them the pinnæ were from $4\frac{1}{2}$ to 5 inches long. In consequence of this nodular thickening of the forehead, eyebrows, and cheeks, the natural skin lines are deepened and appear as deep impressions between the adjacent leprous folds, new lines appear between the nodules causing the skin to have a more or less broken up and crocodile-hide like fissuring, and the nose becomes generally enlarged and flattened. When nodules occur on hairy parts of the face the hair is shed and does not again appear; the eyebrows and eyelashes may thus disappear, and the moustache and beard become very scanty. Owing to this extensive growth of leprous tissue the skin of the face assumes a yellowish brown colour where the nodules are recent and a deep brown colour where they are older. By all these changes a strange wild appearance is given to the altered features and expression, and the whole physiognomy, which is so characteristic of leprosy has been named *Leontiasis*. If once seen it can certainly never be forgotten. After the face and ears, the most favourite situations for the nodules are the extensor surfaces of the forearms, the backs of the wrists and hands and the legs and feet, in all of which regions they existed in my own case. The skin of the trunk itself is very frequently free from nodules, and it is at once noticeable how much rarer the lepromata are on the covered than on the uncovered surfaces of the body. Nodules

were also present in my patient on the hard palate and on the inner surface of the cheeks, and during the latter portion of his illness the great weakening and almost loss of voice, and choking during swallowing, showed that they had also appeared in the larynx and about the epiglottis. The leprous nodules on the face, hands, or other skin surface, vary greatly in size. The smallest that I have seen was about the size of a split pea, and the largest covered an area a little larger than a shilling, and was raised quite a quarter of an inch above the level of the surrounding skin. When recent and small they are usually hard and have sharply defined margins, but after some time, often many months, they begin to atrophy, and finally leave only a dark stain, or a slow process of softening takes place within them, and the skin being broken through, a shallow ulcer is formed from which a thin pus is discharged. When the nodules are more deeply placed, the ulceration left after their softening may be more extensive, and tendons may thus be exposed and joints in a few rare instances opened up. In my own case, the cartilages of the ears became exposed, and necrotic in their lower parts from the ulceration of large nodules. These leprous ulcers are, as a rule, quite painless, and have a very indolent course, but it is often surprising how completely even deep ulcerations heal up, and what a small amount of depression of the scar is to be afterwards seen.

The course of a case of nodular leprosy is made up of a series of recurring crops of nodules, sometimes few, sometimes large in number, and intervening periods of comparatively good health. Each eruption of nodules is generally attended by slight pyrexia, and the patient loses his appetite and complains of feeling poorly. The rise of temperature is however mostly slight (100° F to 102° F), but occasionally it is enough to cause slight delirium. It frequently falls rapidly and after twenty-four hours or less the patient may be again in his usual health, and may continue so until another eruption of nodules occurs. It sometimes though rarely happens in this form of leprosy that the disease appears to wear itself out and a long period of free-

dom from attacks seems to show that a case is cured, but often even after long intervals nodules reappear and the disease again becomes progressive. Nodular leprosy is thus made up of a series of attacks and intermissions, and patients may live for ten years or more with intervals of fairly good health, but the tendency of the disease is to make the sufferer weaker and weaker, and the end comes either from exhaustion or some intercurrent affection. My patient lived about seven years after the first noticed symptoms, but his age (59) and the severity of his attack from the extensive ulceration of the throat and the resulting difficulty in taking food, probably had an important influence in making the duration of the disease a little shorter than usual. In this place the affection of the eyes so commonly met with in nodular leprosy may be conveniently mentioned. The lower eyelid being thickened by leprous infiltration is carried away from the eyeball and the lower and the inner portion of the cornea is thus uncovered even during sleep. In consequence of this a punctiform keratitis is soon noticed in this situation, but the small white patches rapidly run together and a large greyish-white patch results. Leprous infiltration of the cornea itself also takes place, beginning at the edges and spreading towards the centre. The cornea becomes bluish-white in appearance and may in extreme cases become quite opaque. In the case I watched, sight gradually failed in consequence of these changes until at the end only very strong light could be perceived. In other cases, again, destruction of the whole eyeball may follow perforation of the cornea resulting from the ulceration of leprous nodules in its substance.

The next variety or nerve form of leprosy is known as the *anæsthetic*, and is characterised by the appearance of loss of sensation to touch, pain, and temperature in the upper and lower limbs, and occasionally in the face in the region supplied by certain cutaneous nerves. The reasons for assigning the macular eruptions of leprosy to this class also have already been given. Paralysis of certain muscles may also occur, its distribution depending upon the particular nerve trunk affected. Certain

trophic changes, *i.e.*, the formation of bullæ and ulcers and the thinning and actual necrosis of bone may also take place as the nervous trunks become more and more involved in the leprous growth. Finally, in this form of disease the leprous changes may become quiescent or actually die out leaving the patient paralysed and anæsthetic but not otherwise affected, and individuals may continue thus for twenty years or more, eventually dying from other causes.

The nerve trunks most commonly affected are the ulna in the forearm and hand, the peroneal in the leg, and the cutaneous branches of the musculo-spiral to the lower part of the forearm and hand. In the face small branches of the fifth and seventh cranial nerves are most frequently attacked by neuritis, and in my case the presence of ptosis in the left upper eyelid showed that the branch of the third nerve to it had also become involved. The first symptoms complained of by the patient are usually feelings of numbness and tingling, or "pins and needles" in the hands and feet. Most frequently this begins, as it did in the case I have referred to, on the ulnar border of the hand and on the outer border of the foot from the proneness of the ulnar and peroneal nerves to early affection by leprous nodules. This numbness becomes more and more marked, and when the sensation of the affected parts is tested after awhile there will be found to be loss of reaction to the stimuli of touch, pain, and temperature. Other cutaneous branches from the ulnar and musculo-spiral nerves becoming affected and the superficial branches of the median being also attacked will cause a more or less complete anæsthesia of the hands, and a similar loss of sensation may occur over the feet. The anæsthesia may also extend up the forearms and legs, but it is not usual to find it above the elbows and knees except in scattered patches.

Muscular atrophy is most frequently seen in the small muscles of the hand and in the forearm. The thenar and hypothenar eminences waste, and, owing to the paralysis of the two inner lumbricoides and interossei, the first phalanges of the third and fourth fingers are overextended on the metacarpal bones,

whilst the others are flexed, producing in this manner a clawed hand (leper claw) like that seen after division or paralysis of the ulnar nerve. In the leg the peroneal muscles are usually the first to waste, and as the larger nerve trunks become more and more pressed on by leprosy nodules, or their resulting cicatricial tissue, the muscles of the front of the leg and the calf gradually become more and more atrophied until in old cases the legs may be little but skin and bone. Where the large nerve trunks become superficial, *i.e.*, the ulnar behind the internal condyle of the humerus, they can often be found to be thickened and sometimes distinct nodules can be felt in them. In my case I could never detect any thickening in the ulnar or external popliteal nerves, but over the line of the right median nerve above the wrist, six or eight well-marked nodules could be very distinctly felt twelve months before the patient's death.

A curious and interesting fact in Anæsthetic leprosy is the manner in which the extent of the anæsthesia varies from time to time, which is probably explained by an increase in the amount of neuritis taking place in the nerve fibres during the stage of infiltration by leprosy material (bacillary invasion) and a decrease following its absorption. My own case exemplifies this well. In July 1893 the anæsthesia was practically limited to the hands, wrists, feet, and ankles. In June 1894, except for a few small patches, there was almost complete anæsthesia and analgesia below the elbows and knees, and trophic disturbances were much more evident. In December 1894 the loss of sensation in the legs and forearms had begun to improve, and the upper limit of the anæsthesia was roughly half-way between the elbows and wrists and about a similar distance between the knees and ankles, though rather higher on the outer than on the inner side of the legs. By December 1895 there was still greater improvement. The prick of a needle could be felt anywhere above the wrist and ankle joints, and here and there on the dorsum of the feet and hands, but there was still loss of sensation to touch over the feet and hands and over small areas above the wrists and ankles. In June 1896

painful sensations could be felt even over considerable portions of the fingers, so that a very marked restoration of cutaneous sensibility had been going on for eighteen months or two years. Although at one time also the hands and feet were greatly enlarged and the fingers and toes were covered with ulcers and whitlows, yet with the improvement in sensation these also diminished and improved *pari-passu*, and for the last six months of the patient's life the fingers were much more pliable and the skin softer and less scaly.

Along with the anæsthesia and paralysis in the upper and lower limbs, *trophic* changes take place in the skin and bones. An eruption of bullæ (leprous pemphigus) is often the earliest of these, and appears frequently on the already enlarged limbs. Ulcers may be commonly seen on the hands and feet, which appear to be trophic in origin, as they are not due to the ulceration of nodules, and are often most abundant in, or restricted to, the area of distribution of one cutaneous nerve. I have myself seen several small ulcers along the ulnar border of one of the hands, when there were only few elsewhere. The hairs become scanty and devoid of pigment over the anæsthetic areas of the limbs, and the skin itself where there is no epithelial hypertrophy assumes a smooth glossy appearance. The small joints of the feet and hands may be swollen and tender (Hansen) and the bones may become thinned and brittle from a kind of osteoporosis. The terminal and other phalanges may be laid bare by ulceration, and may necrose in their entire length, and all that may be left of the finger may be a short fleshy swelling an inch long or less attached to the hand, and still having a small stunted nail on its dorsal surface. The whole of the fingers and toes may thus disappear, and the carpal and metacarpal joints in the hand, and the metatarsal in the foot may be opened up with resulting necrosis of the small bones. It is said to be remarkable how completely wounds heal up even after very extensive necrosis of bone, but from accounts that I have had from eye-witnesses of leprosy in Bombay, ulceration about these stumps often lasted a long time, and the deformed limbs were used by

the wayside leprous beggars with considerable success to excite that practical form of pity, which extracted a few annas from the passers by.

The mixed form of leprosy does not call for any special notice, as it is simply a combination of the nodular and anæsthetic varieties. Usually nodules first appear and nervous symptoms supervene after a shorter or longer interval.

I may, however, mention under this form the curious mental condition sometimes met with in leprosy, which manifests itself from time to time in states of great excitement, delusions, and hideous dreams. In the case that I had the opportunity of watching, these periods of almost maniacal excitement always occurred at night, and probably after sleep. The delusions had generally to do with religious subjects, and dislike and mistrust of relatives were also prominent features of this strange mental state. I was unable to obtain any details pointing to a rise of temperature during these periods, which only lasted for a month or six weeks, and did not recur when they had once ceased.

The *diagnosis* of leprosy is generally easy. In the nodular form, with a large number of nodules and the characteristic disfigurement of the face, mistake is hardly possible. When however there are only a few nodules it may be necessary to excise one and examine it microscopically before a certain opinion can be given. The nervous form is also very difficult to mistake for anything else when there are the well-marked pigmented and anæsthetic patches on the body and anæsthesia in the area of distribution of cutaneous nerves with or without paralysis and trophic changes in the upper and lower limbs. Of late years however a good deal of interest has been aroused by the suggestion that a considerable number of cases previously recognised as Syringo-myelia were really cases of "masked leprosy," and this view seemed to be supported by the fact that Syringo-myelia in France was most common in Brittany, where Morvan first described it, and that leprosy was also more prevalent there than in any other part of France. The painless whitlows of Morvan's disease, the anæsthesia of the limbs and trunk, and sometimes

the like distribution of the muscular atrophy, do certainly present a certain similarity to leprosy; but out of all the cases of supposed Syringomyelia in which a *post mortem* examination has been made only one has turned out to be a case of true leprosy. During life also, besides other methods of distinction, which it is unnecessary to particularize here, a bacteriological examination would generally decide the question.

Treatment.—Leprosy is of all diseases one of the most unsatisfactory to treat—not that treatment is of no avail, but that whatever plan of treatment is tried, after a longer or shorter favourable course the patient again relapses, and with attacks and intermissions the disease progresses as a rule towards the inevitable end. This of course applies particularly to nodular leprosy, as it must be remembered that spontaneous recovery is not infrequent in anæsthetic leprosy, and that sometimes though very rarely the same fortunate termination is seen in the nodular variety of the disease. These facts must be well borne in mind when considering any particular method of treatment and results must be based on a large number of cases to be of any value. Briefly, the drugs that have been found to be most useful internally are coulmogra and gurjon oil, but the latter appears to be of little value in this country and other cold climates. Coulmogra oil could not be taken by my patient even when enclosed in capsules, as it produced most severe nausea, and this is I believe a fairly common experience. Hypodermic injections of perchloride of mercury have been spoken very highly of by some, whilst others have found them powerless in staying the course of the disease. Other observers of great experience in leprosy recommend excision of the nodules, and on the theory that the febrile attacks are due to auto-infection from existing leprous foci, this method would seem to be at any rate scientifically correct. As in other exhausting diseases the diet should be as nutritious and as easily assimilated as possible, and no routine drug treatment will be generally found necessary or indeed useful. In anæsthetic leprosy good results have been obtained by incision of the nerve sheaths or stretching of the

nerve fibres themselves, but according to some the relief in the symptoms is as a rule only temporary. Ulcers should be treated by simple ointments, and to prevent the odour of decaying epithelium Iodoform will be found very useful. The use of large silk gloves with one division for the four fingers is a very convenient way of keeping dressings in contact with ulcerating surfaces on the hands, as they easily slip over the rough scales and crusts and can be soon washed or replaced by new ones in a few minutes.

When considering *prophylactic* measures it is necessary to carry in mind the different views that are held of the cause and spread of the disease. Hutchinson believes that a fish diet plays some part in causing the disease, in districts where it is prevalent, particularly when the fish is dried and kept for long periods, and has urged the littoral distribution of leprosy and its frequency in the middle ages, when dried and often putrid fish was largely consumed, in support of his view. Leprosy however does occur in places where a fish diet is not taken, and the decline of leprosy since the middle ages can be probably equally well accounted for by the greater cleanliness and more hygienic surroundings in which people have gradually come to live. Most authorities on leprosy however believe that the disease is contagious, and the notable instance of Father Damien and other similar cases of acquired leprosy in Europeans, and the development of leprosy along trade routes, *i.e.*, Brittany and Iceland, would seem strongly to support this view.

Isolation of lepers seems from the above to be the best means of preventing the spread of the disease in communities where it is present, and statistics from Norway seem to conclusively show that leprosy has diminished in that country since the segregation system has been on trial. Removal from a leprous to a non-leprous district may to some extent check the rapidity of the disease and should always be advised in Europeans living in hot countries.

In conclusion, I have endeavoured as far as possible to give a brief description of leprosy, and to illustrate its appearances

and symptoms from what I have myself seen, and have only mentioned important points in the pathology of the disease incidentally where they seemed necessary to justify methods of classification and diagnosis, as I have already exceeded the limits I had intended for this paper, and know that any remarks that I might make on the subject of the pathology of the disease, in the absence of any personal experience in that department, would amount to reviewing by an unskilled reviewer.

ON CERTAIN INTERMITTENT CYSTS OF THE OVARY AND KIDNEY.

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AMONG the cysts which occur in the abdomen, a class is found clinically in which the tumour from time to time disappears; either, as it may seem to the patient, wholly or in part. These cases are not very uncommon, and usually something like the following history is obtained:—After the abdomen has been observed to be increasing in size for a variable time, usually some months, large quantities of urine begin suddenly to be passed, either with or without some obvious cause; in the course of a few days, *pari passu* with the polyuria, the tumour disappears and the abdomen becomes flat. Sometimes there is a history of one such occurrence, and no re-appearance of the tumour: much more frequently the cyst gradually refills, and the processes of bursting, of diuresis and disappearance, and of refilling, may be repeated many times.

Now, the first thought that occurs to one's mind is that such a case must be one of intermittent hydronephrosis; and frequently this is so. Morris collected 47 cases of hydronephrosis causing abdominal tumour, in 6 of which the tumour spontaneously subsided altogether and did not re-appear, while in 6 others the cyst showed marked intermissions in size. He goes

* A Paper read at the Birmingham Branch of the British Medical Association on February 11th, 1897.

on to remark that no doubt many cases which have been looked upon as ovarian, and which have vanished spontaneously, have been in reality cases of hydronephrosis. In 23 cases where the renal cyst did not intermit, 12 affected females, and of these 12, 7 were diagnosed as ovarian, and 5 operated upon on that view of their nature. In the intermittent cases, Morris remarks that "the subsidence of the swelling is no doubt followed by the discharge per urethram of an increased quantity of urine, and when this can be proved to occur, we obtain a most important diagnostic sign of hydronephrosis" (*Diseases of the Kidney*, p. 311). I propose to show that this sign is not pathognomonic of a renal affection, but is an equally characteristic occurrence in connection with certain ovarian cysts. The proof must rest on the comparison of the result of operation or *post mortem* examination with the clear history or observed progress of cases.

For allowing me to retain the following case under my care, I have to express my great indebtedness and my thanks to my colleague, Dr. Malins. The case was an example of an "oligocystic" tumour of the ovary, one of that uncommon type of large cyst otherwise known as dropsy of a Graafian follicle; the cyst had burst into the peritoneum and disappeared with profuse diuresis on several occasions; healed scars were found in the wall of the cyst that was removed by operation.

R. B., a V para aged 31, was admitted to the General Hospital, Birmingham, on Dec. 30th, 1895, with the signs of a very large unilocular abdominal cyst. This had been painlessly increasing for about six years. On at least six or seven occasions, without any pain, the swelling has disappeared, and in the course of three or four days, to use the woman's own graphic simile, the abdomen has become "as flat as a fish." At these times and during the same three or four days large quantities of urine have passed, very clear in appearance and showing no signs of blood or matter, or anything of that kind. The first of these occurrences was about four years ago during a pregnancy; there have been three disappearances in the last twenty months, while the patient has been suckling her last child; the last one was in July, 1895.

A diagnosis of unilocular ovarian cyst was made, and at the operation on December 31st, 1895, a thin-walled cyst of the left ovary, containing twenty-eight pints of clear, colourless, faintly opalescent fluid, and adherent over an enormous area of the anterior abdominal wall was removed. The only viscus to which there were adhesions, was the liver. The cyst had a smooth lining; two secondary cysts, the size of a pea and of a marble respectively, projected on the inner surface at a considerable distance from each other. In three places the wall was thickened and puckered, and more opaque, giving the appearance of having been ruptured and healed by fibrous tissue. The peritoneum was not separable from the wall of the cyst; a fair number of large vessels coursed in the wall. The tube was about five inches in length and was rather thinner than usual; the mesosalpinx was free in its whole extent; the parovarium was clearly visible and seemed to be normal. No trace of the ovary could be seen. The right ovary and tube were normal, and the uterus natural in size and appearance. The patient made an excellent recovery, and was discharged well on January 18th, 1896.

The cyst in this case had many of the characters and appearances of an unilocular parovarian one, but that it really originated in the ovary is clear, because the mesosalpinx and the parovarium were free and normal in appearance, while no trace of ovary was found either at the operation or on subsequent careful examination of the parts removed. Another peculiarity which helps to distinguish from a parovarian cyst is afforded by the impossibility of separating the peritoneum from its surface. I am not aware of any previous case on record in which an unilocular ovarian cyst has been proved to go through the process of spontaneous bursting and disappearance, although this class of cyst is described as being liable to the accident.

Numerous references to cysts of the ovary that have shown this phenomenon of recurrent disappearance with diuresis are to be found scattered through the literature of the subject; and there are many instances on record in which the proof of the

occurrence has been rendered complete by operation, or by *post mortem* examination. Unfortunately in many of the cases the description is insufficient to enable us to distinguish the exact nature of the cyst. The one, however, in connection with which the accident most commonly happens is undoubtedly the unilocular parovarian. In the common multilocular glandular form of ovarian cyst, bursting of a loculus with escape of the contents into the peritoneal cavity is far from uncommon; but it is not proved that the fluid, when it has the usual more or less gummy consistence, can be absorbed and then discharged by means of an increased secretion of urine. Further careful observations are required on this point.

The importance of the diagnosis between ovarian cyst and hydronephrosis is not merely scientific, but is also practical. The correct treatment differs: in ovarian cyst, extirpation is indicated: in hydronephrosis, tapping, followed if the cyst refills, by incision, is the best treatment, according to Morris. Extirpation is the last resource, and should be performed through the loin. Of 16 abdominal nephrectomies collected by Morris in 1885, 9 died and 7 recovered: among the 16, 7 had been diagnosed as ovarian, and of these 7, 4 died and 3 recovered. The failure in diagnosis is therefore a very serious matter for the patient, and nothing need be added to emphasise the practical necessity of forming a correct opinion of the nature of a given cyst. The difficulty which is experienced in arriving at a diagnosis where the cyst is large, is well exemplified by a case referred to by Heinrichs at the Berlin Obstetrical Society, on February 14th, 1896. The patient came under the care of A. Martin with a huge cyst filling the abdomen: the tumour had first been observed during a pregnancy, and appeared to burst while the placenta was being expressed by Crede's method: this accident was followed by profuse diuresis and disappearance of the swelling. In the next pregnancy the tumour appeared again: this time it did not disappear after delivery, but went on increasing in size. The clinical diagnosis of ovarian cyst was made: at the operation the tumour appeared to be a

primary cyst of the mesentery of the descending colon, which piece of intestine coursed over the whole extent of the swelling. Anatomical examination showed the cyst to be a hydronephrosis: it contained seventeen litres of fluid. The patient made a good recovery.

In the early stages of renal and ovarian cysts the diagnosis is as a general rule sufficiently easy. The renal swelling fills one flank and extends forwards in the subperitoneal connective tissue, carrying the peritoneum forwards: this accounts for the fixity and immobility of the tumour, and for dulness to percussion in the loin. At the same time the ascending or descending colon, according as the tumour is right or left sided, is pushed forwards and is found coursing over the front of the tumour. All the borders of the swelling are rounded. The upper border makes an acute angle with the margin of the thorax: the lower border can be well defined by the hand pressed in above the pubes. Contrast with this the moderate sized ovarian cyst, which is median in position: rises out of the pelvis, so that the hand cannot be passed in between its lower end and the pubes: is fairly freely movable: and has no intestine in front of it, while both flanks contain intestine, as is proved by resonant percussion note.

In these moderate sized cysts difficulty may arise on the one hand when an ovarian cyst has become fixed high up on one side of the peritoneal cavity, as may sometimes happen in the course of a pregnancy, and on the other, when cystic dilatation affects a floating or congenitally misplaced kidney, a change which is not very unfrequent.

But in cysts, such as the one of Martin's just mentioned, which fill the whole abdominal cavity, the diagnosis may become difficult even to impossibility. Many of the mistaken diagnoses have, however, been due to want of alertness, and Olshausen remarks that in nearly all the cases on record there has been some characteristic or other that might have shown the true nature of the cyst, if it had been looked for.

In these very large cysts, examination will disclose in either

case an abdomen with a prominent anterior swelling more or less symmetrical, obliterating the umbilicus: the consistence is more or less firmly elastic or fluctuating: considerable variations in consistence and resistance over different portions of the tumour is suggestive rather of ovarian disease: either in hydronephrosis, or in an ovarian cyst which is unilocular or has one large leading cyst anteriorly, free fluctuation wave may be obtained from any one point to any other of the surface. The tumour is not movable in either case. Percussion may afford important evidence. A kidney cyst pushes the intestines over towards the opposite side; so that the side on which the cyst began is dull all round the flank, and the posterior lumbar region is dull up to the spine: the opposite flank is resonant. An ovarian cyst carries the intestines upwards and backwards, and should be surrounded by an area of resonance, which embraces both flanks. But if the intestines are empty of air and collapsed there may be, and often is, dulness in one or even both flanks.

The most important point in the examination of the abdomen is to make out whether or not intestine runs over the front of the tumour: if it does, the case is not one of ovarian cyst, unless, as might be supposed to happen a loop or two of intestine has early become adherent to the front of the cyst. If the tumour is a renal cyst the intestine over the front of the tumour is a portion of the large gut. This when empty and collapsed may be recognised by palpation as a cord coursing over the tumour, and capable of being displaced to and fro over the surface to a certain limited extent: sometimes a gurgling or the sensation of flatus passing may be observed. If the intestine contains gas, percussion will define it as a band of resonance over the elsewhere dull area of the cyst. In case of difficulty or doubt it has been recommended to inject the large gut through the anus or to pass a tube through the rectum and into the descending colon, if we have to do with a left sided cyst. The last suggestion is impracticable, since it has been proved to be impossible to pass a tube through the windings of the sigmoid flexure. Fluids or gases injected into the rectum may reach the

ilio-cæcal valve, but will not pass beyond it. By means of injection then we may succeed in mapping out the large intestine. As material for injection, ordinary water or normal saline solution has been recommended, but air or gases present the advantages of greater lightness, of being better tolerated, and of causing the bowel to give a resonant percussion note. Ordinary air has been injected, but carbonic acid gas liberated by chemical reaction in the bowel itself is the best and most manageable method. Half an ounce of bicarbonate of soda, and three drachms of tartaric acid are dissolved separately in water, four or five fluid ounces for each solution. The soda solution is then injected as high as possible into the rectum by means of the long tube: the acid solution is then injected in several portions, allowing three or four minutes' interval between each. During the injection and afterwards the anus requires to be energetically compressed. As soon as the injection is finished, the large intestine can be easily recognised by means of sight, touch, and percussion.

Vaginal examination may show the lower part of the cyst to be resting on the pelvic inlet, whether we have to do with a renal or ovarian affection. In the case of a renal cyst, both ovaries will be felt *in situ*: both ovaries may be equally felt in the case of a parovarian cyst. The position of the uterus is of more importance: in hydronephrosis, the position will be unaltered, or the womb simply pushed somewhat downwards. Where there is an ovarian cyst the uterus is generally found altered in position; most frequently the fundus is turned backwards, often it is turned to one side or the other, and very commonly it is pulled upwards to some extent at the same time. These alterations in position are to be made out by vaginal and rectal digital examination, and by the use of the sound. Where the fundus is turned forward, as it is in 30 to 40 per cent. of ovarian tumours, the position has no importance as regards diagnosis between ovarian and other cysts. The most important result of vaginal examination is the recognition of a pedicle coming from one cornu or other of the uterus in the case of an ovarian cyst. The search

for this may be facilitated where necessary by causing an assistant to draw down the uterus by means of a volsella fixing the cervix, while digital examination through the rectum is carried out, an anæsthetic being administered if necessary.

Exploratory puncture has been recommended, but it is to be condemned, because in the first place it is at least as dangerous as exploratory laparotomy, and in the second it is frequently useless. Thus in a case of Hilton Fagge's which was shown to Morris, a cyst supposed to be hydronephrotic contained limpid opalescent fluid, of specific gravity 1004, which contained no albumen, sugar, urea, or uric acid: it did contain a small proportion of sodium salts. After tapping, a round hard substance was felt in the left loin. No mention is made of vaginal examination. Similar fluid has been found in other cases of hydronephrosis, and in congenital cases, but exactly similar reactions characterise the contents of parovarian cysts. Where a large percentage of urea is present in the aspirated liquid, the great probability of a renal cyst is clear enough; but on the other hand, not only may urea completely fail, but mucin and paralbumin are sometimes present in the fluid from a hydronephrosis. Uric acid has never been found in ovarian fluids, and so the murexide test might prove of value in some cases. But practically the examination of the fluid is in the majority of instances inconclusive, and sometimes it is actually misleading.

As a corollary to exploratory puncture Simon has proposed to sound the cavity of the cyst, but this procedure would be of more than doubtful utility.

The examination of the urine is also as a rule of no importance in diagnosis, but there is one precaution which should never be neglected and to which attention may here be specially directed. In every case where albumen or other abnormal constituent is found in the urine of a female, the examination ought to be repeated on a specimen obtained by the catheter. By this means contamination with vulvar and vaginal discharges is avoided, and in addition it may occasionally be observed that what is supposed to be urine does not come from the bladder and

urethra at all, but is in reality another sort of discharge and is escaping from the vagina. A case in point is related by Barnes (*Dis. Women*, 1878, 2nd Ed. p. 331): a woman waiting to be tapped for ovarian cyst began to pass large quantities of urine, and her distress subsided. The fluid passed was albumenised serum, with cholesterine plates. The woman died six months later from haemoptysis. The tumour was a tubo-ovarian cyst, and the fluid had all passed along one of the Fallopian tubes into the uterus and vagina, and so externally. Nevertheless this fluid had all along been supposed to be urinary. Cystoscopy with catheterisation of the ureters may occasionally be useful by showing that all the urine is escaping from one ureter.

Occasionally important help to diagnosis may be obtained from the history of the patient. It has been shown that the occurrence of attacks of diuresis with disappearance, more or less complete, of the tumour is of no importance. If after these attacks, however, the remains of the swelling is found in the lower abdomen or in one of the loins, this fact, especially if noted by a trained observer, will possess some weight. If the tumour definitely began in one lumbar region, or if its growth was preceded by attacks of renal colic or by continued pain in one loin, the diagnosis of renal cyst is probable. If the tumour has begun in childhood, and very slowly increased in size, ovarian cyst is very improbable, and hydronephrosis very likely.

I am indebted to my colleague, Dr. Saundby, for the opportunity of examining a second case of abdominal cyst, which was characterised by repeated intermissions attended by copious diuresis. By his kind permission, for which I am glad to take this opportunity to thank him, I am enabled to incorporate in this paper the notes of the case.

C.T., a V-para, aged 56, was admitted to the General Hospital, Birmingham, under the care of Dr. Saundby, on May 27th, 1896, with a lower abdominal tumour, which had first been noticed about 13 years before, and had on the whole steadily increased. Every year, however, on from one to three occasions each year, the tumour becomes painful, and there is dysuria for some days ;

then copious diuresis of pale urine sets in and persists while the tumour diminishes for about a week. Sometimes the abdomen only partially goes down, sometimes it goes quite flat, but even on these latter occasions the patient can feel a hard lump in the hypogastrium. The tumour gave all the physical signs of a flaccid ovarian cyst extending upwards to a little above the umbilicus; free fluctuation wave was obtained all over the anterior surface. The uterus was drawn somewhat upwards, and its fundus was behind the lower part of the cyst. The bladder was proved by catheter to extend backwards below the lower end of the cyst. There was no sign of intestine over the front of the cyst; and there was resonance in both flanks. Operation was recommended, but refused by the patient. The diagnosis seemed to be clearly established that an ovarian cyst was the affection present, and that it was probably unilocular—at least there was one large leading cyst.

In conclusion, it may perhaps be desirable to sum up my own conclusions as to what should be done in a case of doubtful diagnosis. In the first place, all care and diligence should be directed to the examination of the case, the points of chief importance being the relation of the large intestine to the cyst, the relation of the cyst to the loins, and the presence or absence of a pedicle connecting it with the uterus. If the diagnosis cannot be made clearly, operation should be recommended and commenced with an exploratory incision four inches long, placed as low as can safely be done in the median line. Through this the hand can be passed and the relation of the cyst to the uterus and ovaries made out; if the cyst be very tense an aspirator needle may be employed to draw off some of the fluid in order to facilitate examination; the hole made can be closed afterwards if necessary. Through the exploratory incision the relation of the large intestine to the front of the cyst can also be made out if required. If the case turn out to be ovarian, ovariectomy is now proceeded with in the usual way. In hydronephrosis the exploratory opening is closed and an incision into the cyst made in the lumbar region.

If the tumour is not ovarian and still not certainly renal, an incision may be made into it, and the renal pelvis felt for. This is described by Simon as marked in large cysts by shallow, circular or crescentic depressions, lined by mucous membrane and limited by prominent edges; the depressions are fairly rounded and have a diameter of $1\frac{1}{2}$ to 2 cm. and over; their inlets are narrower than their bases. They are placed on the posterior surface of the cyst at distances apart of 3 to 4 cm. If the pelvis of the kidney be recognised, a counter opening should be made in the loin and a large drainage tube introduced. The anterior opening in the cyst wall should then be closed with two superposed layers of catgut suture, the inner continuous and embracing the whole thickness of the cyst wall: the outer interrupted layer placed like Lembert's intestinal suture embracing the peritoneum only. The anterior abdominal wall should then be closed.

NEW GENERAL HOSPITAL.

WE have briefly to record the opening of the New General Hospital by Princess Christian on the afternoon of Wednesday, July 7th. The ceremony was performed in a large pavilion erected on an open space between two of the blocks of the new hospital, and affording room for over 2,000 seats arranged in tiers on either side of a long central aisle. The pavilion was tastefully decorated, and, when all the seats were filled, presented an extremely pretty spectacle. The band of the First Life Guards played a selection of music during the long intervals which elapsed both before and after the arrival of the Princess.

The Princess Christian, accompanied by Prince Christian, Princess Victoria of Schleswig Holstein, the Lord Chamberlain, and Home Secretary, arrived at New Street Station at 12.40 p.m., where she was received by the Lord Mayor and Lady Mayoress, the Lord Lieutenant (Lord Leigh), the High Sheriff (Mr. Howard P. Ryland), the Recorder, and the Town Clerk. After a reception at the Council House, where a Municipal Address was presented,

and luncheon was provided, the Royal Party drove in procession via New Street and Corporation Street to the new hospital, where they arrived about 3-10 p.m., and were received by the President of the Hospital (Lord Calthorpe), and the Members of the Reception Committee.

Entering the hospital by the out-patient department, in which seats had been provided for certain of the children of the Blue Coat School, Graham Street School, and Mason Orphanage, the procession passed along the main corridor on the ground floor to the pavilion. The first part of the ceremony consisted in the presentation to Her Royal Highness of the following members of the Reception Committee and others, namely, Mr. J. C. Holder, Mr. W. N. Fisher, Mr. J. E. Wilson, Dr. Rickards, Mr. T. F. Chavasse, Mr. J. B. Clarke, Mr. A. A. Ellis, Dr. Saundby, Mr. Gilbert Barling, Mr. William Henman, Mr. Howard J. Collins, Miss Stevenson, Mr. T. Barnsley, and Mr. C. H. Barnsley. After an address had been read by Mr. W. N. Fisher, to which a suitable reply was made, the address, contained in a silver casket, was presented by Mr. Holder, and a golden key of the hospital by Mr. Henman. Prayer was then offered by the Bishop of Coventry, and the Princess, in the name of the Queen, declared the hospital open. The Royal Party then left the pavilion, and after inspecting part of the hospital, left for London a little before 4-30 p.m. The audience were subsequently invited to go over the building, tea being kindly provided by Mr. Holder. It is highly satisfactory to add that the hospital was opened entirely free from debt.

On the afternoon of the following day the medical and surgical staffs of the hospital held a reception in the new building of members of the medical profession of the town and neighbouring districts. The guests were received by Dr. Rickards and Mr. Chavasse in the out-patient waiting hall, where Messrs. Gilmer's Orchestra played a selection of music. Tea was served in two of the wards on the ground floor, and the whole of the hospital, with the exception of the second floor and the Nurses' Home, was thrown open. About 1,050 guests attended the reception.

REPORTS OF CASES.

BY WILLIAM F. HASLAM, F.R.C.S.
SURGEON TO THE GENERAL HOSPITAL, BIRMINGHAM.

Simple depressed fracture of the Skull, with symptoms pointing to hæmorrhage between the dura mater and the bone.

J. A., aged 4, admitted November 5th, 1896. At 12.30 p.m. fell off a chair and struck his head against the floor, but was apparently none the worse for it as he got up and went out to play. About a quarter of an hour afterwards he returned home and became drowsy and then unconscious. Was admitted at 2 p.m., and was almost immediately seized with spasmodic movements commencing in the left hand and arm, and rapidly involving the left leg also. The spasms were of a very violent character and affected the face on that side. The knee-jerks were absent. The pupils semi-dilated and equal, but did not re-act to light. Respiration was markedly embarrassed, the face livid, and the mouth full of mucus. There was a very slight depression to be felt on the skull at a point found by drawing a vertical line $2\frac{1}{2}$ inches above the right external auditory meatus, and another at right angles to the upper end of this for two inches backwards. The bone was explored in this situation and a small depressed fracture found about the size of a sixpenny piece, through which blood was oozing. There was no swelling or injury of the scalp. The bone was removed and about a tea spoonful of blood was found between the dura mater and the bone. This was cleared out, and as no bleeding point could be seen, the wound was closed. After the operation, the patient became conscious, the convulsions ceased, and respiration became normal, and from this time he remained perfectly well. The wound healed by first intention.

There are several points of interest in this case.

1. A distinct period of quiescence between the injury and the advent of symptoms.

2. Unconsciousness and violent spasms of the left side pointed to increased intra-cranial pressure with local irritation of the right side of the cerebral cortex.

3. The extreme violence of the spasms pointed to there being probably a wide area of cortical irritation. The operation, however, revealed the fact that the quantity of effused blood was but small. Young children, however, show a want of stability in their nervous system, and are more quickly influenced by trivial irritation than are adults, so that in this case there must have been an overflow of irritation from the actual point of pressure to neighbouring centres.

4. Had the pressure been unrelieved, and the hæmorrhage continued, there would have been a danger of paralysis of the left side. That a very complete hemiplegia may be due to a comparatively small blood clot was evident in a case I operated on some years ago for a meningeal hæmorrhage following a blow from a cricket ball.

5. The complete relief afforded by operation is an indication of the importance of prompt treatment in such cases.

Fissured fracture of the skull. Symptoms of meningeal hæmorrhage after two days, operation, and death.

J. R., aged 64, admitted on December 3rd, 1896, at 11.30 p.m., with the history of having been knocked down by a tram. On admission he was in a semi-conscious state but could answer questions, and was evidently suffering from shock. There was a scalp wound of about an inch in length to the right of the middle line and over the parietal bone immediately in front of the lambdoid suture. The bone was carefully examined but, though bare, no fracture could be seen or felt. Passed a fairly good night; vomited twice.

December 4th. Restless and at times somewhat drowsy.

December 5th. Restless and wandering all day.

December 6th. Had slight twitchings of both hands at 10 a.m., and at 12 noon had convulsions on the left side, commencing in the face and extending to the arm and leg, with left conjugate deviation of the eyes. Pupils were semi-dilated

and equal. He was unconscious. At 12.10 had another fit, and at 12.55 was found to be paralysed in the left arm and leg. Had five similar fits between this and 4.30, was conscious between the fits and could answer questions. The fits lasted about half a minute. At 4.30 p.m. the wound was enlarged under an anæsthetic and on throwing a strong light on the bone a very minute fissure was with difficulty recognised and found to extend downwards and forwards. On extending the opening in the scalp in this direction the fissure became more evident, and it was apparently passing to the base of the skull in the region of the anterior part of the middle fossa. A circle of bone was removed by a trephine from the middle of the visible portion of the fissure and a very large dark blood clot was found between the bone and the dura mater. The opening in the bone was enlarged and the clot, which extended forwards and towards the base, was removed, no bleeding point of any size was detected and a drainage tube was inserted into the cavity occupied by the clot and the wound sutured.

As soon as he recovered from the anæsthetic it was noticed that he could move the left side and answer questions.

December 7th. Restless night, but seems comfortable this morning, no more convulsions, can move left limbs well.

From this time he became very irritable and restless and was constantly trying to get out of bed. His temperature rose and he had considerable general hyperæsthesia. On the 16th he had a rigor and on the 17th he died.

Post-mortem examination.—No signs of suppuration about the wound or within the skull. The fracture was found to extend into the base at the anterior part of the middle fossa. There was considerable laceration of the outer surface of the right temporo-sphenoidal lobe and over this and beneath the dura mater there was fluid blood to the extent of two ounces. The lateral ventricles were enormously distended, and the velum interposition was very much thickened.

The following points are worthy of note :—

1. The difficulty of detecting a minute fissure in the bone, and

the fact that this in its anterior portion had torn some meningeal vessel.

2. The complete absence of any symptoms of extra-dural pressure for two days and a-half, during which time, no doubt, blood was gradually accumulating and finally made its presence evident by the advent of convulsion and left hemiplegia.

3. The symptoms on admission being those of concussion and cerebral irritation only.

4. These being masked later on, for a short time, by those due to pressure, and then, after this was relieved, becoming again evident.

5. The extensive superficial laceration found on the outer surface of the right temporo-sphenoidal lobe, and the presence of a considerable hæmorrhage beneath the dura mater in this situation.

6. The large size of the clot and the short time during which symptoms of compression were present.

7. Immediate relief of these symptoms by operation.

8. The medico legal aspects of such a case, and the possibility of symptoms of compression from hæmorrhage coming on some days after an injury, and when, but for the damage to the brain itself, the patient might have shown no serious symptoms.

Fissured fracture of skull, Cerebral irritation, Pressure symptoms after four days, relieved by Trephining. Convulsions four weeks after accident.

S. S., aged 5, admitted June 14th, 1897. Fell a distance of about six feet on to his head from a swing boat. On admission, no sign of injury to the scalp or bone. Was dull and suffering from concussion, had vomited before admission. The next day was very dull and irritable.

June 16th. Passing everything under him; very irritable, lies curled up in bed, pupils equal, pulse slow and irregular, can be roused with difficulty; no paralysis.

June 18th. Grinding his teeth during the night; at 7 a.m. had convulsions affecting the whole of the right side, face, arm, and leg; these lasted until 8.15 a.m., but varied in intensity.

At 9.30 a.m. the pupils were dilated, and there was paralysis of the right side of the face and of the right arm and leg. At 10 o'clock some movement was noticed in the right leg. Pulse 86. At 3.15 p.m., the condition being the same and the boy unconscious, the skull was explored on the left side and in the region of the arm centre. The scalp was a little swollen and bruised, and on exposing the bone a fissured fracture was found extending across the skull a short distance behind the coronal suture, probably extending into the base on one or both sides. Blood was exuding through this, and on removing a small circle of bone a small extra dural hæmorrhage was found containing about 3ij, or rather more, of blood. This was removed.

June 19th. Had a fairly good night, at 2.20 p.m. had another attack of convulsions of right side of face and arm. Passed water into the bed.

June 20th. Quiet all day. Very slight fit between 1.40 and 2.30 p.m., only right side of face twitching and the arm for a short time. No movement in leg. Slept well, fretful only when roused.

June 21st. Better in every way, no twitchings, quite sensible.

June 23rd. Sits up, seems very well, free movement of right leg, but right arm weak, specially in extensors of wrist and the small muscles of hand.

June 28th. Wound completely healed. Regaining power in right arm and hand.

July 11th. Since last report has been apparently quite well in every way, but in the early morning his temperature rose to 102° and his pulse to 160, and he had slight twitchings of the right side of face and body. At 3 p.m. he commenced quite suddenly to have most violent epileptiform convulsions, starting in the left eye and left side of mouth and extending all over the body. He became "black in the face" and his temperature was 104°. The convulsions lasted for three quarters of an hour. After these had ceased his pupils were dilated and quite insensible to light, he was very drowsy but there were no symptoms by which any mischief could be localised. He gradually improved, his temperature fell, and by the 13th was as well as before.

1. The early symptoms in this case were clearly those of concussion and cerebral irritation, and it was thought that there had been some minute hæmorrhages on the cerebral cortex with definite structural damage to the brain.

2. After lasting for four days, symptoms indicative of damage to the brain in the region of the left Rolandic area were super-added. Bearing in mind that there was already reason to believe that some hæmorrhage had occurred within the dura mater, and that there was no evidence of fracture then, it was uncertain whether the right-sided paralysis was due to a further destruction of the cerebral cortex or to pressure of a clot outside the dura mater.

3. The operation revealed an extensive fissured fracture and blood between the bone and dura mater in sufficient quantity to account for the paralysis. It was noted, however, that the separation of the dura from the bone was chiefly in an upward direction towards the middle line and therefore, in the main, rather away from the position of the arm centre.

4. The relief afforded by the operation was more gradual than in cases where there has been reason to believe that the cerebral cortex has escaped injury other than that due to pressure.

5. The continued weakness in the muscles of the hand and forearm was further evidence of there having been some minute damage in the centre governing their movements. It is of course possible that the pressure of the extra.dural clot may have been sufficient to cause this on a cortex already, presumably, damaged by the primary injuries, and the slow and gradual improvement of these muscles rather supports this view.

6. The violent epileptiform convulsions occurring after the patient had apparently completely recovered, are further evidence of actual damage to the cerebral cortex.

MEDICAL ABSTRACTS.

BY DOUGLAS STANLEY, M.D.

THE occurrence of œdema in cases of Peripheral Neuritis of traumatic origin is not infrequent. It is as a rule local and limited in extent, and cannot therefore be compared with that form observed, though rarely, in some cases of toxic neuritis. Still more uncommon is it to find this latter form of œdema so diffuse as to merit the term anasarca, and only very few cases are recorded. A very marked instance of this rare condition has recently been investigated by Déjerine and Mirallié.* The case came under the care of the former at the Bicêtre Hospital, and in outline was as follows:—

A. B., aged 52, mechanic, the father was “nervous,” the mother healthy, a brother was alcoholic. The previous history was very negative, there being no evidence of syphilis, alcohol, nor lead poisoning. Two months previous to admission the patient had an attack of bronchitis, with severe sore throat, coryza, and headache, followed by a feeling of giving way of the limbs and loss of power. On admission there was no cyanosis, but a very marked œdema was present, involving the whole body. Motor power was almost completely absent in the lower limbs, though very slight flexion of the knees being possible. Both legs were equally affected. The arms were also very deficient in movement, there being slight extension and flexion at the elbow, but more marked on the left side, the patient being able to raise the left hand slightly, the wrists also shewed flexion and extension. There was no facial paralysis and the muscles of the neck, palate, larynx, and eye balls did not shew any loss of power; there was no alteration of sensation in any way; the special senses were unaffected. No subjective painful sensations were

* *Revue de Médecine*, Jan., 1897.

present, but pressure along the course of the nerves was productive of pain, especially in the thighs and calves. The knee jerks were absent; the plantar and cremasteric reflexes were present and normal. The organic reflexes were quite healthy. Electrical examination shewed in some muscles no response to faradic stimulation, very feeble in others, but with the constant current K.C.C. always occurred before A.C.C. The heart sounds were free from murmurs, the pulse rate was 120, the temperature was always normal, the urine was never albuminous but much below the normal in quantity. About a fortnight after admission there was a sudden increase in the amount of urine eliminated and from that time forward the œdema began to subside, and a slight increase in motor power was also observed. On the complete disappearance of the œdema atrophy of the muscles of the lower limbs could be made out. The patient gradually improved and was discharged about two months from the date of admission.

Déjerine thinks there was no doubt as to the affection being a form of peripheral neuritis, the complete absence of albuminuria and any symptom or sign of cardiac disease oblige some explanation of the œdema. The view adopted was, that in this case there was present an acute neuritis involving motor and vaso-motor fibres, and in this latter feature, approaching (1) Some forms of alcoholic paralysis in which œdema is present as first noticed by Lancereux, but differing in its very marked distribution. In the alcoholic form, the œdema is as a rule, peri-malleolar, and does not involve all four limbs; (2) Beriberi, in which more or less œdema is characteristic. In the present instance, there was nothing in the opinion of M. Déjerine that would suggest a sporadic case of Beriberi. He considers the case a very important one as showing the possibility of the vaso-motor fibres being capable of undergoing neuritic changes similar to those affecting motor or sensory fibres.

Polyneuritic Psychosis.—The existence of special mental complications in cases of Multiple Neuritis has been the subject of much discussion, for opinions differ as to the exact relationship

between the neuritis and the mental derangement, often marked, it may be, in some cases. A very full review of the subject by Soukhanoff, of Moscow, has lately appeared.* The author, in his position of physician to the "Clinique Psychiatrique," has had ample opportunity of adding materially to our knowledge of this subject. After reviewing the opinions of various writers—Korsakof, Tiling, Vaindrach, Frank—gives it as his distinct opinion that polyneuritic psychosis is a distinct morbid entity, and has a prominent bearing on the case, and that the mental symptoms are as marked as the physical. The first symptom as a rule is derangement of memory—amnesia; the degree of intensity of the amnesia does not vary much in individual cases, but the period of memory shows marked differences not only in the same patient but in different cases of the same disease. Thus, the amnesia may refer to present events and surroundings, former circumstances being retained. In other cases it is more complete. The more memory corresponds with recent events the better the prognosis. Connected with amnesia is the symptom of Pseudo-reminiscence; the patient so affected will give most minute accounts of where he has been, what he has done. Pseudo-reminiscence is largely dominated by the patient's profession or employment. In other cases some surrounding object may set up some special form of pseudo-reminiscence; thus, cases are quoted where the bars outside the patients' window impressed them with the idea that they were in prison, and they gave in detail the crimes for which they had been imprisoned. Again, the neuritic pain may lead the patient to think he or she has broken a limb bone and a most detailed account of the accident will be given. In cases where pseudo-reminiscence is subjoined to simple amnesia, the prognosis is graver.

Loss of interest in their surroundings and slowness of ideation, more or less marked apathy are usually observed in these patients. Soukhanoff and Korsakof say that patients presenting these

* *Revue de Médecine*, May, 1897.

mental symptoms should be thoroughly examined as to the existence of peripheral nerve lesions. The former gives, in the paper quoted, instances of marked mental disease with only insignificant pains in the limbs and diminution of the patellar jerks. In several cases this writer has had opportunities of examining the nerve trunks *post-mortem*, and a distinct neuritis was revealed. It seems to be more particularly in cases of tuberculosis that one must be on the watch for neuritic complications, and in such a case the prognosis is bad in the extreme. In reviewing the etiology of Polyneuritic Psychoses, many factors are met with, and as may be supposed, by far the most frequent cause is alcohol, but be the cause what it may, there is according to many recent writers, much evidence to show that there is absorption of some general poison into the blood. The urine has been carefully examined in several cases, and its high acidity, its dark colour becoming deeper on exposure to the air suggested the presence of abnormal constituents. Brasch found large quantities of urobilin to be present; an observation which has been confirmed by others. This fact points strongly to a general system in intoxication.

Like the mental conditions associated with Multiple Neuritis so those frequently present in Migraine also exhibit much variation. Féré, whose investigations in mental disorders connected with neuroses are so well known, has recently recorded some very interesting facts bearing on the subject of Migrainous Psychoses.* It is more particularly in the ophthalmic form of Migraine that we meet with mental complications. Incoherence, loss of memory, terror, have often been noticed, and all seem to vary according to the time at which they appear in the attack and their duration, and Féré points out that in a large number of unsuspected cases careful examination of the mental functions will reveal psychic disorders which may precede, accompany, or follow the attack itself. They may be of a very transitory nature, or may last in some instances for periods varying from a few days to several weeks. In some cases this author found

* *Revue de Médecine*, May, 1897.

alternation of purely mental conditions with the ordinary migrainous attack. The more severe forms are in fact transitory maniacal attacks, or in some cases very marked melancholia with hallucinations: groundless fears, etc., may characterise them. It is obvious that such symptoms may easily lead to an error in diagnosis and the true migrainous character of the case be overlooked.

Féré records a very interesting case in illustration of this. A girl, aged 19, the last of six healthy children, in the first five of whom no nervous trouble had been known to exist. The father was gouty, the mother obese; the present patient was born a fortnight before turn, the child was quite healthy with the exception of a few slight attacks of infantile convulsions till seven years of age. From that time she suffered at intervals from severe headache and violent fits of anger without sufficient cause. The former was characterised by a feeling as if a nail were being driven into the left temporal region and would cease with an attack of vomiting. The fits of anger came on as suddenly, and then the patient would dash to the ground anything she might have in her hands at the time, would call those about her by abusive names and would also roll on the ground. In a few minutes all this would pass off. One day, without any obvious cause, the fits of anger were replaced by torpor passing off in about ten minutes, but the pains remained unchanged. When about ten years of age the symptoms of pain and torpor gave place to sensations of light or loss of visual power, especially in the right side; visual hallucinations of strange animals appearing on the right side; sometimes auditory hallucinations as of a low muttering voice, were present. At 13 menstruation began and with it the pain in the head completely disappeared. Later on, during menstruation, the patient was suddenly frightened. The discharge stopped for several days, the patient suffered from violent attacks of migraine with scintillating scotomata, visual hallucinations of strange animals approaching from the right, and disappearing on reaching the middle line. In the space of twelve days she had eight attacks of migraine and some were

followed by great prostration and loss of memory for all recent events. Féré looks upon this case as one of great interest and importance as showing the varying character of migraine, and to a large extent its relation to epilepsy. The patient improved most markedly under the influence of Bromide of Potassium.

The fact that stimulation of certain cortical regions produces contraction of the limbs, not only of the opposite side but also of the same side of the body as the excited cortex, if the stimulus be sufficiently strong, is still difficult to explain. One view is that there are commissural fibres in the cord which carry the stimulation across to the other side of the cord, *i.e.* to the same side as the stimulated cerebral hemisphere. This theory has much in its favour, but on the other hand it does not appear as the only one; thus, section of the cord so performed as to prevent such transmission does not do away with homolateral movement on stimulating the cortex, and we are therefore obliged to admit that there must be some more direct mode of transmission. Wertheimer and Lepage have performed a very interesting series of experiments with the object of elucidating this obscure problem.* They made a transverse hemisection of the cord at the level of the second cervical vertebra, on the left side. If then the cortex were stimulated on the right side in the foot region, the left foot remained at rest but the right exhibited movement. Similarly epileptic seizures only affected the right posterior limb. Furthermore, on comparing the movements of the right posterior limb on excitation of the right and the left motor cortex, it was found that stimulation of the right produced well marked, almost tetanic, extension movements, while stimulation of the left produced co-ordinated flexion movements. A fact which was brought out in these experiments was that a stronger stimulus was required to produce homolateral movements than was necessary for the diagonal cortex.

One of the earlier explanations was that recrossing of the fibres took place in the cord. Thus, supposing a left hemisection of the cervical cord at the level of the second segment, an

* *Archives de Physiologie*, 1897.

influx of fibres from the right side below the hemisection would account for homolateral movement on stimulation of the left cortex. A certain amount of support was given to this hypothesis by the occurrence of bilateral descending degeneration after unilateral hemispherical lesions. The following experiment however seems to be strongly opposed to the redécussation theory. A first hemisection was made immediately below the lowest point of the fourth ventricle on the left side. Stimulation of the right cortex then caused movements of the left posterior limb. A second hemisection was subsequently made at the level of the first cervical roots on the left side, *i.e.* the same side of the cord but at a lower level. Stimulation of the right cortex then failed to produce movements of the left posterior limb, but the right shewed movements. If then a median longitudinal section were made between these two hemisections, or better still, if the half of the cord between them were excised, it was found that instead of the fibres to the homolateral limb being divided, as they would necessarily be were there redécussation, movement could still be obtained in the posterior limb of the same side as the stimulated cortex. In cases where a very long median incision was made, a like result was obtained. The conclusion to be drawn therefore, from these experiments, is that there are in each lateral pyramidal columns, fibres which pass directly from the hemisphere downwards, and which do not decussate. It is these fibres which show descending degeneration in the so-called crossed pyramidal tract on the same side after an hemispherical lesion, and this degeneration is not, in the opinion of Wertheimer and other physiologists, due to redécussation. If future investigations support this opinion, a great advance will be made towards explaining many obscure points in the symptomatology of hemiplegia.

REPORTS OF SOCIETIES.

KIDDERMINSTER MEDICAL SOCIETY.

Meeting held at the Kidderminster Infirmary on Friday, April 2nd, 1897, Mr. W. MOORE, President, in the chair.

Cases and Specimens. — Mr. J. L. Stretton showed—

1. A Murphy's button from a case of cholecystenterostomy. It was passed on the fourteenth day after operation, and the patient was doing well.

2. Two phosphatic calculi removed by suprapubic operation from an old gentleman, aged 78. He had been sounded by several surgeons in London and the provinces with a negative result, and it was not until three months after double castration had been performed, and considerable shrinkage of the prostate had resulted, that the stones were struck. The patient made a good recovery.

3. A boy, aged 9, upon whom radical cure of hernia had been performed three months previously with a satisfactory result.

Mr. Davies showed a boy aged 6 years with crepitations over the bases of both lungs posteriorly, more especially just below the angle of the scapula on the right side. The boy had been under constant observation for three months; there were no constitutional symptoms, and he had gained weight, but no form of local or general treatment had any effect upon the physical signs. No expectoration had been obtained.

Mr. E. P. Hasluck read a paper on the Treatment of Chronic Ailments.

Meeting held at the Kidderminster Infirmary on Friday May 28th, 1897, Mr. S. STRETTON in the chair.

Mr. A. T. Oldham was elected a member of the Society.

Cases, etc.—Dr. Thompson sent notes of the following cases:—

1. Punctured wound of abdomen with prolapse of the gut, in a girl aged 4 years. The child had climbed up a pair of rusty harrows supporting a door without hinges, the sharp points being directed outwards; the harrows, together with the door, fell over on to her, and some of the spikes entered the left side of the abdomen, causing protrusion of about eight inches of gut. She was brought from the country four miles in a spring cart, with the protruded bowel covered with a wet cloth. In order to return the bowel, chloroform was administered and the opening enlarged. The wound was then stitched up, and a pad and bandage applied. The child was driven home in the pouring rain. She had no bad symptoms; but two days later she was sent to the Kidderminster Infirmary under the care of Mr. J. L. Stretton in case any complications might arise. She made an uneventful recovery.

2. Seventeen biliary calculi removed *post mortem* from a female aged 36. When first seen she had intense pain over the hepatic region. The following day symptoms of severe peritonitis supervened, and before arrangements could be made for her removal to hospital she died. On opening the abdomen and exposing the gall bladder, a portion of a stone was visible through a recent perforation, and the peritoneum around was seen to be intensely inflamed. There were sixteen more stones within the gall bladder. These exhibited a remarkable appearance, being perfectly white and polished, the surface resembling porcelain.

Mr. J. L. Stretton showed—1. the patient upon whom he had performed cholecystenterostomy. Murphy's button was passed on the 14th day after the first operation; there was a considerable discharge of bile and fæces through the gall bladder to allay which the wound was plugged with iodoform gauze. The second operation was then performed. On examining the gall bladder it was impossible to detect any opening between it and the intestine, but on opening the peritoneum the two were found to be in close contact. An elliptical incision, including the fistulous opening, was made, and the edges of the fistula freshened and closed with deep sutures, the elliptical opening being brought

together over it. The wound healed without any trouble and the fæces continued to contain bile, which they had not done prior to the operation, showing that there was some communication between the gall bladder and intestine. Mr. J. L. Stretton thought it would be better in future to perform both operations at one time for fear of the contraction of the newly formed openings.

2. Seven urethral calculi weighing sixty grains in the dry state, removed from the urethra of a youth, who came up complaining of retention. Six of the calculi were found after incision lying in the fossa navicularis faceted together, and were removed with urethral forceps. Some few months later, the seventh and largest of the calculi was found impacted in the bulbous portion of the urethra, and was removed by incision.

Mr. J. P. Holyoake and Mr. E. H. Addenbrooke mentioned two similar cases occurring in elderly men, and Mr. Hasluck exhibited one of the calculi.

Mr. E. P. Hasluck showed—1. A sequestrum removed by Mr. J. L. Stretton from the tibia of a man, who met with a fracture two years previously.

2. A Caterpillar, Species *Pieris Brassicæ*, vomited by a child, aged 5 years, after eating some raw cabbage. The parents asserted that the caterpillar was vomited alive.

Mr. P. E. Davies read a paper entitled "Notes on Anæsthetics."

REVIEWS.

THE LIFE AND TIMES OF THOMAS WAKLEY.*

THIS book contains some very interesting chapters of medical history, and portrays a man who undoubtedly has deserved well of the profession for much good work done in its behalf. But it

* The Life and Times of Thomas Wakley, Founder and First Editor of the *Lancet*, Member of Parliament for Finsbury, and Coroner for West Middlesex. By S. Squire Sprigge, M.B., Cantab., etc. London: Longmans, Green & Co. 1897.

would have gained greatly by compression ; for it suffers much from a somewhat diffuse style, and contains not a little that might with advantage have been omitted. Nevertheless, the life is undoubtedly one that should have been written, and Dr. Sprigge has succeeded in making many parts of it of very considerable interest.

Thomas Wakley did much good work in three very different capacities : first as founder and editor of the *Lancet*, a position in which he made himself exceedingly prominent by his vigorous and uncompromising attacks on many existing medical abuses ; secondly, and of least importance, as a Member of Parliament ; and thirdly, as a just, wise, and intrepid medical Coroner. It is in the latter capacity that he appears to us to have shown to the greatest advantage ; for his work was here entirely unsullied by the grossness which disfigured much of his editorial writing. Moreover, by his persistence in sifting to the bottom cases which many powerful interests were concerned in hushing up, by the fearlessness which he displayed in the pursuit of his duties, and by the many enlightened methods which he was the first to introduce into this branch of judicial work, he paved the way for the great improvement which has since generally taken place in the conduct of our inquests.

Of his work as a medical reformer, it is hard to speak with a full measure of justice. The abuses which he attacked, whether in Hospital or College administration, were undoubtedly often of the most serious description ; and it is undeniable that we largely owe to his exposure of these abuses many of the advances which have been made. But, indeed, both the methods which he pursued, and the language which he allowed himself to use, were frequently of such coarse and even savage description that the sympathy of the reader is to a great degree alienated at a very early stage of the book.

The most terrible instance of all was undoubtedly afforded by the manner in which attention was called to the fatal case in which Mr. Bransby Cooper occupied nearly an hour in extracting a stone from the bladder of an unanæsthetised patient.

Believing, as he did—whether rightly or wrongly, we do not know—that this was only one instance of the bungling of an inefficient operator, who had been elected to his post of hospital surgeon through the influence of his all-powerful uncle, Sir Astley Cooper, Wakley may very possibly have been justified in reporting and calling attention to the occurrence ; but the tragic nature of the catastrophe, together with the terrible consequences involved to Mr. Bransby Cooper, render the sensational and almost frivolous tone in which the operation was both reported and commented on a piece of peculiarly bad taste. Thus, the following in itself somewhat amusing piece of doggerel appears in another part of the same issue of the *Lancet*, in allusion to the fact that another patient, about to be operated on for stone in Guy's Hospital, had taken fright at the disaster and had migrated to another hospital :—

“ When Cooper's ‘ Nevey ’ cut for stone,
His toils were long and heavy ;
This patient quicker parts has shown,
He soon cut Cooper's ‘ Nevey ’.”

The abuse, however, was, it must be admitted, not all on one side ; for in return for his many personalities, there was no moderation shown in the replies of his enemies. On the whole, we may certainly congratulate ourselves on the improved methods of literary warfare which are at the present time in vogue ; and may believe that, had he lived in later times, a greater decency would have been observed even by so good a hater as Thomas Wakley.

The book is published under the auspices of the present Editors of the *Lancet*, who are both the near relations of the subject of the memoir. It is creditable to them that it contains no attempt to palliate the indiscretions chronicled, and that it fully acknowledges the mischief of which they were the cause. At the same time, we may perhaps feel with the author that a more moderate tone might quite possibly have failed in remedying the abuses which were so fearlessly attacked.

Dr. Sprigge's work has been well done on the whole, in spite of the unfortunate diffuseness which we think does much to

spoil the book. Here and there, there are some rather surprising lapses in the management of the English language : for example, it would be a difficult matter to analyse the sentence in which he states that "The next occasion *that* Wakley played an important part in Parliament was during the debates upon Mr. Cripps's County Coroners Bill." Such examples, however, are not numerous, and may well have been the result of an oversight only. As we have said, the book contains much that is of interest from the point of view of medical history.

A SHORT HISTORY OF ARYAN MEDICAL SCIENCE.*

THIS book contains a short but very interesting account of the medical history of the Hindoos, for the word Aryan is used as synonymous with Hindoo by the author. The antiquity of Hindoo medicine, its wisdom in many directions, and its elaboration in others, give much interest to the subject ; and, without going quite so far as the writer, we may certainly recognise in many of its doctrines and beliefs the germs of some of those advances in medical science for which the present century is apt to take exclusive credit.

By far the oldest medical work extant belongs to the Hindoos, and is to be found in the Ayur Veda, supposed to have been written by Brahma at least 4,000 years ago, even according to European chronology. This sacred book treats of the science of life, the conditions which tend to prolong and shorten it, and deals with the nature, causes and treatment of disease. Moreover, in the Rig Veda, frequent reference is to be found to various surgical matters, such as the use of artificial legs and eyes, the treatment of wounds, etc. Many other books of later periods also are extant ; and especial mention may be made of those of two writers, who lived some few centuries before Christ, Charaka and Sushruta, by name, the latter of whom is said to

* A Short History of Aryan Medical Science. By H. H. Sir Bhagvat Singh Jee, K.C.I.E., M.D., D.C.L., LL.D., F.R.C.P.E., Thakore Saheb of Gondal. London : Macmillan and Co. 1896.

take amongst the Hindoos the same position as that occupied by Æsculapius with the Greeks. The latest medical work based upon the Ayur Vedic literature was written about A.D. 1550.

According to the Hindoos, the creation is the result of the coming together of Purusha, spirit, and Prakriti, matter. Man, it is held, is made up of 25 principles, the first of which is Prakriti, and the 25th Purusha. Of the several parts of the body, certain, such as the hair, nails, teeth, arteries, veins, tendons, and semen, are derived from the father; whilst the muscles, heart, blood, marrow, fat, and the viscera, arise from the mother. Disease is believed to be caused by the derangement of the three principal humours, namely, wind, bile, and phlegm, or by the evil deeds of the sufferer in some former period of existence; thus, a murderer of a Brahman will suffer in a later life from anæmia, a cow-killer from leprosy, a regicide from consumption, and so for many other diseases. In other instances, the two causes are combined. Diseases due to the misdeeds of a former life may be cured by certain rites and ceremonies, or in default of actual cure, the evil tendencies may be obviated as far as future existences are concerned. Diseases caused by derangement of the humours may, on the other hand, be treated directly by therapeutic measures.

In the diagnosis of disease, the ancient Hindoo physicians made use of the methods of palpation, percussion, inspection, auscultation, and of the senses of taste and smell. Especial attention was paid to the characters of the pulse, the compressibility, frequency, regularity, size, and the general impression which it conveys to the fingers. If creeping like a serpent, jumping like a frog, or strutting like a peacock, it indicated that wind, bile, or phlegm was predominant, respectively; whilst a pulse that suggested the running of a partridge was called a "delirium pulse," an irregular pulse suggested delirium tremens, and a scarcely perceptible, irregular and feeble pulse indicated the approach of death.

The Hindoo principles of hygiene, though mingled with a good deal that seems puerile to our ideas, yet included much

that was admirable, and show that the prevention of disease received at least as much attention as its direct treatment. It may suffice here to say that injunctions were laid down for the management of life in very many directions ; and that climate, diet, cleanliness and personal hygiene, bathing, sleeping, and the performance of many of the visceral functions, were all subjected to many wise regulations. Moreover, strict laws for the behaviour, personal habits, and professional comportment of the physician are to be found in the Hindoo medical works, some of which have their bearing even at the present day.

Of the belief of the Hindoos in omens and portents, charms, and astrology, we need say nothing ; but it is unfortunately firmly bound up with the medical practice of the country. Nor have their surgical attainments advanced beyond a very elementary stage, chiefly owing, no doubt, to the English occupation of the country, by which Hindoo surgery has been supplanted by the far more advanced European methods. In justice to the Hindoo medicine, however, it must be acknowledged that the pharmacopœia was extremely elaborate and well-organised, whilst the medical treatment, though mixed with much that seems to us to be irrational and even superstitious, yet commands respect, and in some points might be imitated with advantage.

Sir Bhagvat Sinh Jee is to be congratulated on the ability with which he has compressed into a comparatively small space a very large amount of material ; he has given a brief but very comprehensive sketch of an extremely large subject, and has made it full of interest.

ON GALL-STONES OR CHOLELITHIASIS.*

THIS book gives an extremely good account of what is known up to the present time of the formation, symptoms and treatment of Cholelithiasis. The author's views as to the formation of gall-

*On Gall-stones or Cholelithiasis. By E. M. Brockbank, M.D., (Vict), M.R.C.P. (Lond). London : Churchill. 1896.

stones are interesting and intelligible. He thinks that this formation is due either to an excess of cholesterin secreted by the mucous membrane of the bile passages, or to a diminution in the amount of the bile-salts allowing some of the cholesterin formed to escape solution. The action of micro-organisms in the bile is discussed impartially, and the conclusion that the author arrives at is that if they have any effect on the formation of calculi, it is probably brought about by the resulting catarrh of the mucous membrane of the bile passages. We are glad that Dr. Brockbank draws attention to the important facts, that gall-stones composed of mixed bilirubin-calcium and stratified gall-bladder calculi may be dissolved in the bowel, and so disappear before they reach the anal orifice; and that stones coated with a shell of pure cholesterin are the only ones that are likely to pass through the intestines to be voided per rectum. The section treating of the diagnosis of distended gall-bladder is as good as anything in the book; and the final chapter on surgical indications is of considerable clinical value. Of necessity, the author has been obliged to avail himself very largely of the experience of others, and we shall look forward in the future to an edition of this book, chronicling his views after a more extended clinical acquaintance with the subject.

THE URINE IN HEALTH AND DISEASE.*

THIS book contains a good and on the whole a very full account of the physiology and pathology of the urine. It begins according to the usual custom with a chapter on the anatomy and physiology of the kidney, and then deals successively with the normal and abnormal constituents of the urine, its sediments,

* *The Urine in Health and Disease, and Urinary Analysis, Physiologically and Pathologically Considered.* By D. Campbell Black, M.D., L.R.C.S. Edin., F.F.P. and S. Glas, Professor of Physiology in Anderson's College Medical School, Physician to the Glasgow Public Dispensary (Department for Kidney and Urinary Diseases), &c. London: Baillière, Tindall and Cox. 1895.

the composition of urinary calculi, and occasional accidental constituents introduced medicinally or from without. There are, it is true, occasional omissions. One of the chief of these appears to us to be the absence of any reference to the views advanced by Sir William Roberts, and now very generally held, with regard to the composition of the amorphous uratic deposit. This is described by Dr. Black as consisting of the acid urates, or biurates, bodies which Sir William Roberts believes to be highly unstable in the presence of urine, and, if for that reason alone, never met with in the unchanged secretion. We need scarcely add that the latter writer holds that the amorphous urates consist of a loose chemical combination of uric acid with the biurates, and are described by him under the old name of quadriurates first proposed for them by Dr. Bence Jones. Again, we note that the method described by Mr. F. Gowland Hopkins for the estimation of uric acid is not included in Dr. Black's book. The accuracy of this method, which consists in the conversion of the uric acid into ammonium urate, precipitation by hydrochloric acid, and titration with a normal potassium permanganate solution, has now been amply established, and its simplicity, compared with the other methods, entitle it, we think, to a place in any book on the subject. These two omissions, however, go far towards completing the list, and are by far its most serious items; and we can, in all other respects, congratulate Dr. Black on having written a useful and compact account of this most important branch of clinical study.

BURDETT'S HOSPITALS AND CHARITIES.*

WE have to acknowledge the receipt of Mr. Burdett's annual volume, which is second to none of its predecessors in completeness and interest. Except for purposes of reference, its main interest of course centres in the preliminary chapters, which deal

* *Burdett's Hospitals and Charities, 1897.* Being the Year Book of Philanthropy. By Henry C. Burdett. London: The Scientific Press, Limited.

with what we may term the science of charity administration. Among other matters, this part of the book treats of Hospital Finance (expenditure and income), Hospital Commissariat, and the Hospital Saturday and Sunday movements. Mr. Burdett appeals in his preface for a more liberal discussion in the press of some of the points which he raises, especially of certain questions in connection with the Hospital Saturday movement. In the chapter devoted to the latter subject, he especially pleads for the omission of the term "free gift" in connection with the contributions of the working classes, inasmuch as considerable and expensive benefits are received in return. With much of this chapter we entirely agree; but the whole question of the working class contributions is so large, and is so intimately mixed up with other questions—for example, that of hospital reform—that it would be profitless to attempt any discussion of it within the limits of a review, and we doubt whether the criticisms asked for will be forthcoming, at all events in the medical journals. Mr. Burdett may rest assured, however, that the chapters in this volume and its predecessors have done much to throw light upon these very difficult matters.

PUBLISHERS' DEPARTMENT.

New Inventions, Drugs, etc.

We have received from Messrs. BURROUGHS, WELLCOME & Co. specimens of the three following preparations:—

Tabloids of Compressed Pig-Bile (purified), each tabloid containing 4 grains of bile. These were prepared at the suggestion of Dr. George Harley, who pointed out that, the pig being like man an omnivorous animal, and the ox herbivorous only, it would seem more rational to prepare bile for human use from the

former. Whether there is really any corresponding difference in the bile of the two animals is not at present known ; but the pig bile is likely to be at all events equal to that of the ox, and may possibly be superior.

Tabloids of Potassium Permanganate, for hypodermic use ; each tabloid containing 2 grains of the drug. These tabloids are intended for use in cases of opium or morphia poisoning.

Tabloids of Ergotinine Citrate (gr 1/100) and Strychnine Sulphate (gr. 1/20), also for hypodermic use—the strychnine being thought to increase the efficacy of the ergotinine.

New Books, etc., Received.

The Architect and Contract Reporter. July 2nd, 1897.

Transactions of the Grant College Medical Society, Bombay, from January to December, 1896.

A History of the Fire Service and its Organisation.

Eye Strain in Health and Disease, with Special Reference to the Amelioration or Cure of Chronic Nervous Derangements without the Aid of Drugs. By AMBROSE L. RANNEY, A.M., M.D., late Professor of the Anatomy of the Nervous System in the New York Post-graduate Medical School and Hospital ; late Professor of Nervous Diseases in the Medical Department of the University of Vermont, etc. Illustrated. Philadelphia, New York, and Chicago : The F. A. Davis Company. 1897.

Modern Medical Education. By J. C. WILSON, M.D., Professor of the Practice of Medicine and of Clinical Medicine in the Jefferson Medical College, etc.

A Plea for a State Medical Service. By JAMES ERSKINE, M.A., M.B. Glasgow : John Morgan and Co. 1897.

The Pocket Therapist. A Concise Manual of Modern Treatment for Students and Junior Practitioners. By THOS. STRETCH DOWSE, M.D., Fellow of the Royal College of Physicians of Edinburgh ; late Physician Superintendent Central London Sick Asylum, etc. Bristol : John Wright and Co. London : Simpkin, Marshall, Hamilton, Kent, and Co. Ltd. 1897.

The Analysis of Food and Drugs. Part I., Milk and Milk Products. By T. H. PEARMAIN and C. G. MOOR, M.A. Cantab., Members of the Society of Public Analysts. London : Baillière, Tindall, and Cox. 1897.

Convergent Strabismus and its Treatment. By EDWIN HOLTHOUSE, M.A., F.R.C.S., Surgeon to the Western Ophthalmic Hospital. London : J. and A. Churchill. 1897.

Diet Chart and Alimentary Index. Suggested by M. J. KENNY, L.R.C.P. Ed., L.R.C.S.I., etc. Bristol : John Wright and Co. 1897.

King's College Hospital Reports ; being the Annual Report of King's College Hospital and the Medical Department of King's College. Edited by NESTOR TIRARD, M.D., F.R.C.P., W. WATSON CHEYNE, F.R.C.S., F.R.S., JOHN PHILLIPS, M.A., M.D., F.R.C.P., and W. D. HALLIBURTON, M.D., F.R.S. Volume iii., October 1st, 1895, to September 30th, 1896. London : Adlard and Son. 1897.

The Position or Posture of the Patient during Parturition, with Special Reference to the Merits of the Walcher Position. By ANDREW F. CURRIER, M.D., of New York City.

Ventral Hernia Resulting after Abdominal Section, and its Treatment. By ANDREW F. CURRIER, M.D.

Royat Medical Guide. By G. H. BRANDT, M.D., and J. EGERTON BRANDT, M.D. Fourth Edition.

A System of Medicine. By many writers. Edited by THOMAS CLIFFORD ALLBUT, M.A., M.D., LL.D., F.R.C.P., F.R.S., F.L.S., F.S.A. ; Regius Professor of Physic in the University of Cambridge, Fellow of Gonville and Caius College. Volume iii. London : Macmillan and Co. Limited. 1897.

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THE
BIRMINGHAM MEDICAL REVIEW.

SEPTEMBER, 1897.

ORIGINAL COMMUNICATIONS.

STONE IN THE KIDNEY,

WITH A REPORT OF EIGHT CASES OF NEPHROLITHOTOMY.*

BY GEORGE HEATON, M.A. M.B. OXON., F.R.C.S.

HONORARY SURGEON TO THE GENERAL HOSPITAL AND TO THE
CHILDREN'S HOSPITAL, BIRMINGHAM.

It is probable that the great majority of calculi which are found in various parts of the urinary tract, whether it be the urethra, bladder, ureter, or kidneys, are formed in the first place in the latter organs, and pass down thence, either unnoticed or accompanied by an attack of what is termed renal colic, into the lower urinary organs. This being the case, it is perhaps surprising, on first thoughts of the subject, that, while the removal of stone from the bladder by cutting (or as it is termed Lithotomy) should have been practised by surgeons for now some 400 years or more, it is only in quite recent years that any systematic effort should have been made to dislodge them from their original birthplace, the kidneys. But on consideration, the reasons for such delay are sufficiently obvious. Before the days of general anæsthesia, interference with so deeply seated and so delicately sensitive an organ as the kidney was precluded by the very nature of the operation; and from the accounts we have, the operation for the removal of stone from the bladder must have been a somewhat gruesome and harrowing pro-

* Read before a meeting of the Queen's College Medical Society, March 10th, 1897.

ceeding. Even after the introduction of anæsthetics, surgeons were for a long time restrained by fear from any interference with so vital an organ as the kidney. And lastly, there is the difficulty, which still exists in the majority of cases, of making sufficiently certain that a stone is present to justify so severe an operation.

The ease and certainty with which we can now determine positively the presence or absence of a stone in the bladder renders the subject of vesical calculus a question merely of the best means of extracting it. Stone in the kidney, if more uncommon, is therefore a subject of more academic interest, owing to the far greater difficulties in the way of accurate diagnosis and the wide divergence of opinion which still prevails among medical men as to the best methods of treating it.

During the past few years I have had several such cases under my care, and I have thought that it might serve some useful purpose if I collected them together and attempted to draw some conclusions from them.

The trouble which first attracts the patient's attention is, as a rule, some uneasiness in one or other loin. This may not at first amount to actual pain, but is occasionally from the very beginning so severe as to render the patient an invalid. The pain is usually increased by any motion of the body which produces a movement of the stone within its host, such as jolting, jumping, or in fact any violent exercise, and is frequently brought on by bending of the body forwards. Rest in the horizontal position as a rule relieves or even cures it for the time, until some incautious movement brings on another attack. The pain is one-sided, situated immediately beneath the lowermost ribs behind, and passes downwards into the corresponding groin and testicle.

As a symptom it is subject to great modification. The position of the stone within the kidney, its shape and size, have probably much to do with the severity or mildness of the attacks.

In my own series of cases the pain was most severe in case

No. 4, in which the stones, though small, were numerous, freely movable in the pelvis of the kidney, and exceedingly angular in shape. In fact, pain as a prominent symptom in the early stages of the trouble and before the onset of suppuration, will usually point to the stone being situated in the pelvis of the kidney rather than embedded in its substance. This conjecture is rendered the more probable if the patient have in addition a history of one or more attacks of definite renal colic.

A history of typical attacks of renal colic is not by any means necessary in order that a diagnosis of stone in the kidney may be made, but when present will aid us materially in coming to such a conclusion. The attacks, even when present, as a rule disappear as the stone gets too large to enter the orifice of the ureter, and give place to a wearing almost constant lumbar pain.

It must always be borne in mind how closely attacks of hepatic or biliary colic sometimes resemble that of renal; but the radiation of the pain from the loin downwards and forwards into the corresponding groin, and the acute tenderness of the testicle often present in cases of stone, will help to differentiate them.

Tenderness.—It is seldom that a stone exists for any length of time in a kidney without producing some degree of tenderness of the organ. In fact, the one-sided character of the pain and tenderness are our chief guides in localising the stone to one or other kidney. In some cases, especially where there is any distension of the kidney pelvis, this tenderness is a most marked and valuable symptom.

Mr. Jordan Lloyd first drew prominent attention to the peculiar and almost pathognomic "stabbing pain" which such patients experience when a sudden deep pressure is made with the finger in the direction of the kidney from the loin. This symptom is a most valuable help when present, but is unfortunately not always to be elicited. It was present in a characteristic manner in three out of my eight cases.

The occasional presence of blood in the urine of patients

suspected of having a calculus is a sign of much importance. It is also one which is rarely indeed absent at some period of the patient's history. The hæmorrhage is seldom profuse for any length of time, rarely produces anæmia, and is usually intermittent in character. It should be an invariable rule in cases of this kind to make a systematic daily examination of the urine with the microscope, for it is only by this means that the occasional passage of very small quantities of blood can be recognised.

In my own experience hæmorrhage is most free when the stone is embedded in the kidney substance itself, and is apt to be much less in quantity and rarer in appearance when the stone is in the pelvis of the kidney. In fact, pain and hæmorrhage are sometimes present in inverse ratio.

Other morbid conditions of the kidney may give rise to blood in the urine, and hence it becomes necessary, if possible, to exclude these before arriving at our diagnosis. The most important of such conditions are malignant disease of the kidney (either sarcoma or carcinoma), tubercular disease, chronic interstitial nephritis, or even the passage through the kidney of urine highly charged with uric acid.

Pyuria.—With the blood cells there will be seen under the microscope a varying number of pus cells, and these may be seen in the urine after the hæmaturia has passed off. When pyelitis has been set up by the stone pus will be present in increasing quantities; and its discharge is apt to be somewhat intermittent if only one kidney be affected.

There is usually some frequency of micturition due to a reflex irritability of the bladder, and the act is often accompanied by pain. This however is a symptom which is liable to great variations, and is sometimes absent from first to last.

As yet the Rontgen rays have not rendered much assistance to Surgeons in locating the presence of stone in the kidney. It must be remembered that owing to the position of the kidney in the loin, a very prolonged exposure is necessary with our present apparatus to produce any image on the sensitised photo-

graphic plate. And at the same time, as the kidney lies chiefly under cover of the ribs behind, their shadow might easily obscure that produced by any but a large calculus. Mr. Hall Edwards has lately conducted a series of experiments for me on the relative opacity of various calculi to these rays. His experiments tend to show that all kinds of calculi transmit such rays though in a varying degree. It does not seem probable, therefore, that the Rontgen photography in its present state will be of much assistance to us, though improvements in the sensitiveness of the films and the penetrative power of the rays may in the near future help us to make the presence of a renal calculus a matter of certainty before operation.

Diagnosis.—It has been well said of renal calculus as a disease that our treatment of it has outstepped our powers of diagnosis. In many cases an uncertainty will remain up to the last, and nothing but an exploratory operation and careful tactile examination of the kidney will render the presence or absence of stone a matter of certainty. Several diseases cause symptoms closely resembling it, and have if possible to be excluded; such as—a painful moveable kidney, tubercular disease of the kidney, early malignant disease, aneurism of the renal artery or splenic axis, caries of the dorso-lumbar spine, constant passage of urine highly charged with uric acid and urates.

With the exception of “movable kidney” and the gouty kidney last mentioned, all these troubles are much more rapid in their progress than calculous disease. For this reason time will in many of the cases render our diagnosis easier, and the chronicity of our patients’ symptoms becomes an important element. A rapid enlargement of the kidney with profuse hæmaturia will point to its being sarcoma or carcinoma, while aneurysm or spinal caries will soon make themselves evident in other ways. A movable kidney rarely gives rise to hæmaturia. The kidney can as a rule be easily palpated, and is found to be abnormally movable, while the characteristic stabbing pain is absent.

It is always difficult in the early stages, and sometimes quite

impossible, to distinguish between stone in the kidney and tubercular disease. A careful thorough examination of all the other organs will help us most in avoiding mistakes. The testicles, prostate, and lungs should be most carefully examined for evidence of tuberculous deposits in them. The urine, too, should be examined for tubercle bacilli, though I am bound to say that a negative result is not of much value in excluding tubercle. Generally speaking, besides being more rapid in its course, tubercular disease of the kidney more quickly produces a tumour in the loin, the frequency of micturition is more distressing, the pain less amenable to treatment by rest, the temperature more fluctuating, and the pus found in the urine increases rapidly in quantity.

Treatment.—There is no doubt that occasionally a stone in the kidney gives rise to little or no pain or discomfort, and the patient may be quite ignorant of there being anything amiss with him. Now and again such calculi are found in the *post mortem* room, quite accidentally, when there have been no symptoms during life to call attention to them. Such cases, however, are quite exceptional. As a rule, when once a stone has been formed in any part of the urinary tract, it tends to grow by a deposit of fresh material on its surface, and sooner or later to give rise to serious pain and trouble. When it remains in the kidney, quite apart from the trouble it may set up by its increase in size, a stone by its mere presence keeps the organ in a state of chronic congestion, which readily passes into one of inflammation. Nor is this congestion limited to the kidney in which the calculus lies; reflex vascular changes are soon set up in the other kidney, and continue as long as the cause of them persists. This explains the great difference which exists in the risks of operations undertaken for the removal of kidney stones in young and old patients, the high mortality amongst the latter class of patients being due to gross pathological changes already existing in the other kidney at the time of operation.

Time will not permit me to even touch upon the various

troubles and complications which follow in the train of a kidney calculus. Suffice it to say they are so numerous, so diverse, and attended for the most part by such danger to life that no patient should be allowed to harbour a stone in his kidney any longer than is necessary to get him into a fit state to stand the operation for its removal.

It is only right in this connection to utter a protest against the practice of allowing such stones to remain as long as they do not completely invalide the patient or confine him to bed. Such a practice was, until quite recently, the rule, and is even now often advised. Surely if we are careful to remove a calculus from the urinary bladder as soon as we detect its presence there we should be still more solicitous not to allow it to remain for any length of time in a far more delicate and vital organ such as the kidney. The excuse which is frequently urged for such dalliance is the doubt which must often necessarily exist in dealing with so deeply seated an organ as the kidney—viz., the uncertainty as to whether a stone is actually present; and this doubt unfortunately is not removed in some cases until the stone is actually touched at the operation.

As regards the solvent action of drugs on renal calculi, I am scarcely in a position to speak dogmatically from my limited experience. Owing to the many changes which drugs undergo in their passage through the human body, I am somewhat sceptical as to the efficacy of medicines given by the mouth for their supposed solvent action on stones in the bladder or kidney. However cases have been recorded by competent and trustworthy observers where it is claimed that this has happened. Personally I have frequently seen the greatest possible benefit follow in cases of lithiasis with lumbar pains and occasional slight hæmaturia, careful dieting and a long course of alkalies as medicines. I am accustomed to place such patients on a diet from which butcher's meat is rigidly excluded, and to give them to drink distilled or rain water with potash or lithia; and in addition to prescribe drachm doses of citrate of potash in a tumbler of warm water three times a day. Under such a course

of treatment all pain and tenderness often disappear. The probable explanation of such cases is that the pain is due to a scratching of the delicate mucous lining of the calyces and pelvis of the kidney by sharp angular crystals of uric acid, and the measures taken reduce the quantity of uric acid excreted while they increase its solubility, and so do away with the cause of the irritation. Whether such a mode of treatment will exert any direct solvent action on a stone already formed is open to question.

The radical and rational treatment of a case of stone in the kidney, unattended by complications, may be briefly summed up, as consisting of a free exposure of the organ from the loin and removal of the stone from within it by making a direct incision on to it.

Into a long description of the operation it is not my intention to enter; and I shall only briefly allude to a few points in its performance which have forced themselves on my attention in my short series of cases. It is essentially a major operation, and the patient should therefore undergo careful preparation. In order to lessen the quantity of urea which the kidneys will have to excrete afterwards, it is a good plan to give him a non-nitrogenous diet for a few days before operation.

Chloroform with a quarter of its bulk of ether (to counteract its depressant action on the heart) is the best anæsthetic. The operation itself may be one of extreme ease and simplicity or one of the greatest difficulty. Easy if the patient is thin, the kidney situated low down in the loin and within reach, and the stone a small one and quickly detected; difficult in a stout patient with a short loin, in whom it is only with the utmost difficulty that any part of the kidney can be exposed at the bottom of a deep wound. When the stone is a large one, the kidney, owing to its increased weight, has often become more movable than natural, and falls away from the surface when exposed. A good assistant will here be of much service in supporting the abdomen and in forcing the kidney, by pressure from the front, into the wound.

Occasionally (as in case No. 8) the kidney is found to be high up under the ribs almost out of reach. I was only enabled in this case to bring it into view by separating it carefully from its connections, and then seizing it in volsellum forceps and dragging it forcibly downwards. When the kidney is reached, the hand should be passed round its outer border, and after gently separating the peritoneum from its front aspect, the whole organ can usually be palpated between the fingers and thumb. The stone may even then not be actually felt, yet generally a localised hardening of some part of the kidney substance will suggest its probable site, and by probing with a long sharp harelip pin in this direction, the calculus is usually easily reached. If after careful palpation and probing in this way no stone has been detected, and yet the symptoms have pointed strongly to such a stone being present, the pelvis of the kidney must be opened by cutting through the kidney tissue directly into it, and then a systematic exploration of the pelvis and calyces made with a small bladder sound, as has been described by Mr. Jordan Lloyd.

When the stone has been detected in any of these ways an incision is made directly down on to it. The fears which were formerly entertained as to the non-healing of wounds of the pelvis of the kidney seem to have little foundation in fact, and need not deter the operator from cutting on to the stone directly through the posterior wall of the pelvis. The best method of doing this is, while keeping the needle firmly in contact with the stone to make an incision directly on to it with a sharp-pointed narrow-bladed knife, and then to pass the forefinger into the wound so made until it rests against the stone, when the needle may be withdrawn. The finger in this way will serve a double purpose. It will verify the presence of a stone and form some idea of its size and shape; and at the same time will act as a plug to check the free hæmorrhage which takes place when kidney substance is first cut. The stone, if small, is then extracted with a small lithotomy scoop or a pair of sinus forceps passed into the kidney by the side of the finger. But in many

cases there is considerable difficulty in extracting the stone. This may be due to its size, its position, mobility or impaction.

A stone may be so large, so irregular in shape, and so firmly fixed in the dilated calyces of the kidney as to occasion the utmost difficulty in its removal. In one of my cases (case No. 6) where the calculus weighed $5\frac{1}{4}$ oz., it was so large and so firmly wedged in the pelvis of the organ that I was forced, after several prolonged attempts at extraction, to remove the kidney entire with the calculus *in situ*.

The position of the stone sometimes gives rise to difficulties in its removal. It may be situated high up in the kidney, almost out of reach, or be deeply imbedded in its substance. The most troublesome cases of all are those in which a number of small calculi lie free in the dilated pelvis and calyces of a kidney in a condition of early pyonephrosis. In such cases one or more of the small calculi may be quite lost in one of the upper dilated calyces (cp. case No. 2, in which several of the smaller stones were afterwards passed through the wound). After removal of the stone a piece of iodoform gauze is to be passed into the wound in the kidney, and the organ, which from the handling it has been subjected to, is usually freely movable in the loins, should be stitched to the lumbar fascia. The external wound is to be well drained.

Besides the difficulties encountered in the removal of the stone, other complications occasionally arise during the performance of the operation which may be briefly mentioned here.

Hæmorrhage is generally free and may be profuse during the operation. In such a case no time should be lost in removing the stone, for until this is done, the bleeding, however stopped, will almost certainly break out afresh when the next attempt is made to remove it. The kidney should then be firmly compressed between a hand placed on the front of the abdomen, exercising counter pressure, and one or two large sponges pressed deeply against it at the bottom of the wound. Firm pressure applied in this way for a few minutes will, as a rule, arrest the bleeding. If oozing still goes on, the wound and

kidney should be well irrigated with hot water at a temperature between 105° and 110° , a careful watch being kept meanwhile upon the pulse. The most effectual means of stopping hæmorrhage which does not yield to these means is a careful and systematic plugging of the wound in the kidney with strips of iodoform gauze. This method, while the most effectual, should not be resorted to until others have failed, owing to the fact that it is apt to cause much pain and obstinate vomiting afterwards; and, as a rule, an anæsthetic is required whilst the packing is being removed.

Shock is a symptom of very variable intensity. Sometimes there is scarcely any, and sometimes it is so severe as to threaten to kill the patient outright. It is most marked, as a rule, in those cases where it is necessary to drag much on the kidney to bring it into view, or where much manipulation and laceration of the kidney become necessary to extract the stone. The most extreme shock I ever witnessed followed the operation in case No. 4. The stones in this case were easily felt, quickly cut down upon, and extracted without difficulty. Yet for more than an hour after the operation the boy lay in a state of such extreme collapse that his recovery seemed hopeless.

Shock is to be combatted in the usual way. First of all by adopting all possible precautions to minimise it during the operation—such as keeping the patient's extremities warmly clothed and avoiding all unnecessary exposure—and when it is alarming, by the application of external warmth to the extremities and the sub-cutaneous injection of repeated small doses of ether and strychnia.

When the size of the stone is so great that it is impossible to dislodge it from the kidney, or when at the operation the organ is found to be already so much damaged that no hope can be entertained of its ever recovering its functions, it becomes a very difficult matter to decide upon the best course to pursue—whether in fact nephrectomy should at once be performed, or whether the operation shall be abandoned for the time and a secondary operation done at some future time. On the one

hand the patient, already exhausted by a prolonged operation, is, as a rule, in a very unfit state for so serious an operation as nephrectomy; while, on the other hand, nephrectomy when performed as a secondary operation is known to be attended with a very high mortality and to be a very dangerous proceeding.

If the patient's condition will permit, it is better to proceed at once to remove the organ with the stone *in situ*. The kidney has already been separated in some measure from its connections by the previous efforts at removal of the stone, and the operation will hence be a much simpler one than if performed at some later time when it has formed adhesions to the colon, peritoneum, and psoas muscle. This I did in case No. 6, where the stone after removal weighed five and a quarter ounces, and the patient made an excellent recovery.

In this connection I would utter a protest against a practice which is adopted by some operators, particularly those engaged in gynaecological practice, of proceeding at once to abdominal nephrectomy in cases of calculous pyelitis or early calculous pyonephrosis. It is doubtless in many cases a far simpler proceeding to remove the whole organ with the offending stone within it than to laboriously attempt to extract the stone; the patient's convalescence is far more rapid, and the case redounds more to the credit of the operator. But we must remember that a patient who has lost one kidney is very seriously crippled for life, and it is our duty, whenever possible, to save any useful portion of the secreting tissue of a kidney. Primary nephrectomy in calculous pyelitis is very much on a par with amputation of a limb for some such local trouble as an unhealed ulcer without first attempting to heal the ulcer.

No mention has been made in this paper of the method, first advocated by Mr. Knowsley Thornton, of exploring the kidney through the abdominal cavity for stone, and then removing it when discovered through a small incision in the loin. By this method, with one hand in the abdominal cavity, it is claimed that the presence or absence of a calculus within the organ can

be put beyond a matter of doubt. This method, though in the hands of Mr. Thornton very successful, has never commended itself to surgeons generally.

The after-treatment of such cases calls for but few remarks. The patient should be kept upon a light non-nitrogenous diet for a week or more after the operation, but may have plenty of liquid food. The wound often heals in an extremely rapid manner; but when there has been much pyelitis before the operation a sinus usually persists for some weeks, from which urine in small or large quantities escapes, and which is sometimes slow to completely close. After convalescence is established the patient should be warned against an excess of nitrogenous diet in the future, and it is a good plan for him to drink rain or distilled water, instead of the ordinary hard well-water. By such and similar precautions he may guard in some degree against the formation of fresh stones.

Appended is a brief clinical report of the cases of stone in the kidney upon which I have operated. They are eight in number and all have made good recoveries with the exception of my first case. Death was here due, not in any way to the operation, but to scarlet fever of a most malignant type to which the patient was unfortunately exposed and which he contracted three days after the operation. The other seven cases are all now in perfect health, and with the exception of case No. 2, have had no recurrence. The latter case has since the operation passed a small calculus which was in all probability left behind at the operation, but has since then been quite well.

Case No. 1.—*Right Renal Calculus. Nephrolithotomy. Scarlet fever. Death.*

T. D., a man, aged 20, admitted into the General Hospital, on May 16, 1892, suffering from Hæmaturia.

History.—Has had occasional attacks of profuse hæmaturia for the last four years. Never any pain or tenderness until the last three months. Since then, pains in right loin passing down into the groin. A well-developed, though anæmic young man. Urine, acid. Blood cells constantly present. Every few days

passes urine, red with blood. Has lost large quantities at times. Stabbing pain well-marked.

May 16th.—Right Nephrolithotomy. Kidney high up under ribs. Calculus felt in pelvis. Pelvis opened from behind and calculus extracted.

Patient went on well for two days after the operation. He then caught scarlet fever from another patient in the next bed to him in the ward, and was removed to the Fever hospital. The fever was of a malignant type, and he died on May 27th.

Calculus. A uric acid one, covered with dried blood. Weight, 50 grains.

Case No. 2.—*Multiple small Oxalate of Lime Calculi. Nephrolithotomy. Cure.*

C. N., a policeman, aged 28, was transferred to my care at the General Hospital by Dr. Rickards in January, 1894, suffering from attacks of renal colic on the right side, with slight hæmaturia. His history dated from October of the previous year when he had an attack of renal colic. Since then he has had six attacks of well-marked colic with occasional hæmaturia. Has never passed a stone. Is totally incapacitated from work of any kind.

Condition on admission.—A very stout man. Has lost flesh considerably lately. Has constant tenderness and pain over the right kidney. Had one well-marked attack of colic, lasting thirty hours, whilst in bed. Urine acid, contains a cloud of albumen and a few red blood cells.

January 19th.—Right Nephrolithotomy. Exposure of the kidney difficult owing to the depth of the wound necessary to reach it. Calculi felt in dilated pelvis of kidney. Pelvis opened and two small calculi extracted. Several others escaped beyond reach into the dilated calyces. Much pain after the operation. Wound left open, and ten more small calculi extracted at different times, sometimes with an anæsthetic, sometimes without.

Quite well after leaving the Hospital until September 1894, when he had several more attacks of colic. On October 12th

he passed a small calculus. Since then he has had no further trouble, and continues his work as a policeman. The calculi, with the exception of one fair-sized one, are all small, but with two or three long sharp-pointed projections on them.

Case No. 3.—*Left Renal Calculus. Uric Acid. Weight, 38 grains. Nephrolithotomy. Cure.*

H. F., aged 9, male, admitted into hospital, under the care of Dr. Rickards, Dec. 18th, 1894, with symptoms simulating typhoid fever. Under medical treatment, these passed away. Whilst under observation had two attacks of well-marked renal colic, followed by profuse hæmaturia. Some indefinite history of occasional attacks of abdominal pain.

No pain or tenderness whatever in either loin, and no frequency of micturition. Urine, sp. gr. 1020, and contains pus. Microscopically, a few red blood cells always seen, mixed with the pus cells, and uric acid crystals.

March 9th, 1894.—*Left Nephrolithotomy.* Calculus easily felt in the several tissues at its lower border. An incision was made over it and the stone extracted with a scoop from the cortical substance of the organ in which it lay embedded.

Tube removed on third day. The wound was completely closed on the tenth day. Calculus, an irregular shaped uric acid one, weighing 38 grains.

Case No. 4.—*Left Renal Calculi. Nephrolithotomy. Cure.*

W. T., aged 11 years, was admitted into the Children's Hospital November 21st, 1894, with occasional attacks of left lumbar pain and hæmaturia.

History.—For twelve months has been subject to attacks of pain in left lumbar region. The attacks occasionally "double him up" for some hours. The urine during this time often resembles port wine. Occasional attacks of pain in the right side. No loss of flesh, or anæmia.

On admission. Occasional pains in the left loin. No tenderness anywhere, or stabbing pain on deep palpation over the kidney. Whilst under observation had several attacks of profuse hæmaturia. Urine between attacks clear, and sp. gr. 1015

Qty. 3xxx.-xl., and contains 2.5 per cent. urea. Under the microscope a few pus cells and no blood corpuscles. No renal casts or crystals.

Operation, Dec. 3rd, 1894.—Left lumbar nephrolithotomy. Multiple punctures with long needle detected a stone in lower part of kidney. Two small stones extracted. Free hæmorrhage from cut kidney tissue, necessitating plugging with gauze. Extreme shock for three hours after the operation, necessitating hypodermic injection of ether and strychnia. Gauze removed next day.

Patient discharged with wound soundly healed. Two small uric acid calculi weighing 35 and 5 grains.

Case No. 5.—*Calculous Pyelitis, Left. Nephrolithotomy. Recovery.*

J. L., a boy, aged 17, admitted into the General Hospital in March, 1895, suffering from pyuria and pain and frequency of micturition. Patient has already had two large phosphatic calculi removed by supra-pubic lithotomy from the bladder; last time by myself in June, 1894. He has now frequent and painful micturition with a tender swelling in the left loin. Urine contains much pus, and a few red blood cells. Small calculus detected by sound in the bladder.

March 30th.—Supra-pubic lithotomy and left nephrolithotomy simultaneously performed. Small phosphatic calculus with a uric acid nucleus removed from the bladder. The left kidney was exposed, its pelvis opened and two small uric acid calculi removed from its interior.

The kidney wound healed very quickly. The supra-pubic bladder wound healed very slowly, but was sound at the end of two months.*

Case No. 6.—*Calculous Pyelitis of left Kidney. Nephrectomy. Cure.*

J. P., a joiner, aged 30, was admitted into the General

* Since writing the above paper, the patient has again been admitted into the General Hospital, and a large phosphatic calculus with a nucleus of uric acid removed from his bladder.

Hospital October 30th, 1895, suffering from pyuria and a large painful swelling in the left loin.

History.—Subject to attacks of pain in left side since 10 years of age. Pain worse last three years. Last three years has noticed “matter” in the water. Once, many years ago, passed some blood after playing football. Has never noticed any since. No frequency of micturition. Has lost much flesh.

Condition on admission.—Thin spare man. A hard tender mass to be felt in left loin in situation of the kidney. Micturition painless and normal. Urine faintly acid, varies in quantity from 48–60 oz.; deposits on standing a thick layer of pus. Microscopically, contains large quantities of pus cells, and a few oxalate of lime crystals. No red blood corpuscles ever found after repeated examinations. Urea varies from 2 to 2½ per cent.

November 9th.—Anæsthetised. Kidney explored through left loin. Organ found much enlarged—stretched as it were over a large branched calculus. After many attempts to remove the calculus by crushing it and free incision into the kidney, nephrectomy performed and kidney removed with stone *in situ*.

Not much shock from operation. Much pain for two days, then uninterrupted recovery. A small sinus remained until January 2nd, 1896, when the silk ligatures used were discharged.

Seen, February 1897. Has gained a stone and a half in weight, looks and feels well. Some neuralgic pain in right side.

The stone was firmly wedged in the dilated pelvis of the kidney and sent branches into all the dilated calyces. It consisted of uric acid with a thin deposit of phosphates on its surface, and weighed 5½ ounces.

Case No. 7.—*Renal Calculi, right side. Nephrolithotomy. Six calculi removed. Cure.*

A. W., a male aged 18, admitted into the General Hospital July 29th, 1896.

History.—Occasional attacks of renal colic for past six years, attacks increasing in severity. Has passed a number of small calculi per urethram. Occasionally a little blood in the urine. Attacks generally brought on by work. Free from pain when

in bed. Thin spare lad. Acute tenderness in front over the right kidney. A sharp "stabbing" pain elicited on deep palpation in the loin. Lower border of kidney can be felt. Bladder sounded with negative result. Urine acid, sp. gr. 1014, a faint haze of albumen present, no blood. Under the microscope numbers of calcium oxalate crystals seen.

August 8th. Nephrolithotomy right side. Calculus detected with a needle. Pelvis opened and five small calculi and one large one removed. The larger one, which was impacted in the pelvic opening of the ureter, weighed 53 grains. They consisted mainly of uric acid and urate of ammonia. Wound in kidney packed with gauze.

Uninterrupted convalescence. Primary union of wound, except along track of gauze.

Case No. 8.—*Right Calculous Pyelitis. Nephrolithotomy. Cure.*

W. R., aged 25, male, was admitted into the General Hospital, in November, 1896, suffering from pyuria and pain in the right loin. Patient had complained of pain and tenderness in the loin since the age of 4 years. Latterly, he had been passing varying quantities of pus in the urine, but has never noticed blood. The kidney could be felt enlarged, but there was no characteristic stabbing pain. Urine acid, sp. gr. 1015. Large quantities of pus. No blood was ever detected in it even under the microscope.

Nov. 14th.—Nephrolithotomy. Kidney enlarged and situated very high up under cover of the ribs. Stone felt in dilated pelvis. Organ was dragged into the wound with volsella and the pelvis opened. Free escape of foetid muco-pus. Large branched calculus extracted. The kidney, which was considerably dilated, was thoroughly flushed with boracic acid lotion and drained.

During convalescence, patient had several attacks of sharp pain resembling renal colic which ceased after passing large masses of mucus per urethram. He was discharged well in January, 1897, and has remained well since. Calculus, weight, 80 grains; a branched uric acid one.

NOTES OF EPIDEMIC PLAGUE AT CUTCH MANDVI.

YERSIN'S SERUM ANTIPESTEUX TREATMENT CONTRASTED WITH ORDINARY METHODS.

BY N. DEMPSTER MASON, SURGEON-CAPTAIN, ARMY MEDICAL STAFF,
IN MEDICAL CHARGE, PLAGUE HOSPITAL, CUTCH MANDVI.

THE following notes have been compiled from personal observation of over 1,200 cases in hospital and a very large number outside.

From a fair amount of evidence, it is highly probable that the earliest manifestation occurred here at the end of February, 1897, that the patient had been brought by sea from the infected neighbouring port of Karachi, and, owing to the feeble attempt at quarantine, was permitted to be nursed in the segregation hut by relations living in the village of Maska. Naturally enough, plague then broke out in the house of the relatives, from whence it spread to the town of Mandvi and all the villages in the immediate vicinity. Having once established itself, the disease found every condition favourable not only for its existence, but for its rapid development in the most virulent form.

(a) *Local*.—The conditions chiefly affecting propagation are a warm and a very humid atmosphere, a people living in and around a mediæval walled city on the sea coast, low, badly ventilated, worse lighted, and over-crowded houses, accumulation of years of putrifying matter in every direction, the most revolting filthiness in personal habits, the whole city little better than one large latrine, in such a primitive state of insanity that it requires to be seen to be believed. This condition appears, on enquiry, to be exactly what might have been anticipated where no organised system of scavenging had existed for centuries.

Conditions of Existence between Sick and Healthy.—The relations between the sick and healthy undoubtedly exercised a most important influence on the propagation and extension of the disease. In the absence of quarantine, perfectly free intercourse existed between the healthy and the sick, and it has been noticed that persons living in the same house with the sick are peculiarly liable to suffer, whilst those brought only into occasional contact are not so likely to become infected. This observation has been well illustrated in the various hospitals where there has been a large staff employed in doctoring, nursing, and other duties of an occasional character. Out of this number there have been only two cases of plague, one an orderly and the other an ayah.

There is no doubt that the disease is "caught" from the sick by the healthy brought into association with them.

Contagion.—There have been several means of conveyance—
 1. By the air, producing the very common and fatal form of Primary Plague Pneumonia. 2. By the food or drink (acute Plague Dysentery). 3. By the skin. 4. By the tonsils. I am inclined to think that the third method is far commoner than is generally supposed, especially amongst the cases affected with buboes.

Out of the following 166 cases of deaths with Buboes at Brahampuri Hindoo Hospital there were—

Right inguinal	- 60	Cervical	- - - 1
Left inguinal	- 58	Supra-trochlear	- - 1
Right axillary	- 19	Parotid	- - 1
Left axillary	- 11	Multiple	- - 8
Submaxillary	- 7		

From the above it will be seen that by far the largest number of buboes affected the groin. The explanation of this appears to be that the Cutchees wear no protection to the feet, and it is perfectly easy to understand that under these circumstances even so slight an abrasion of the superficial epithelium (an unavoidable occurrence in a bare-footed race) would provide a mode of entrance to the bacillus, followed by an inflammatory

condition of the nearest glands. The same principle applies equally to other parts of the body. The next largest number to the inguinal are the axillary, the right axillary nearly double the left, because the right hand is not only used more than the left, but is almost exclusively used in eating.

The submaxillary becomes infected by the entrance of the bacillus through a carious tooth, the supra-trochlear from the hand, the parotid through Stenson's duct, the cervical through the tonsils. These cases fairly illustrate the frequency of direct inoculation.

Of other means of indirect contagion, there appears to be some evidence of the transmission of the disease by the agency of clothes and bedding which have been used by the sick; but the main point in connection with the liability of the healthy to contract the disease seems to be dependent on the intimacy and regularity of communication with the sick.

Incubation.—It seems next to impossible to furnish any precise data with respect to the actual period of incubation, but there has been sufficient evidence to indicate that in the large majority of cases it is short.

By direct inoculation it is probable that the period varies from a few hours to one or two days. By other methods it may extend to a maximum of eight days, and the average might be set down at five.

Symptoms.—Perhaps the most striking point in connection with the types of the disease is that its onset and progress differ enormously in different cases. Most commonly after the usual initial febrile symptoms the fever commences, and either concurrently with this or from the second to the fourth day tenderness followed by buboes in the groins, axilla, or angles of the jaws. The febrile condition is usually acute in the early stages, often accompanied by severe headache, and in the worst cases by delirium and stupor. In some of these latter the whole toxic effect of the disease seems to localise itself in the central nervous system producing the gravest symptoms. The suffused eyes, the hesitating drunken speech, the inability to comprehend

or answer questions, the feeble pulse, the extreme prostration, all marked indications of the severity of the attack. The swelling of the glands increases and is accompanied by tenderness, sometimes followed by acute pain. In several cases, very uncommon and rapidly fatal, a condition has been noted in which no gland could be detected, but a thick, puffy, œdematous condition of the skin over the situation of the gland (in the axilla especially) which rapidly spreads to the adjoining parts, in one case commencing in the right axilla, extending on the right side over the whole of the chest, as low as the last rib, across the front of the chest to the tip of the left shoulder and over the right shoulder into the neck as high as the lower jaw. All these cases proved rapidly fatal. The pulse runs quickly up to 120-30. The temperature varies from 102 in mild to 107 in the severest form. The end of the fever is commonly marked by a sudden fall of temperature, often as low as 97 or 96 F. In the early stages bilious vomiting has been a very common and very grave symptom. The urine commonly contains albumen, and there have been several cases of retention and two of complete suppression.

Local signs.—Of the local signs, the appearance of buboes or rather tenderness not unfrequently precedes the symptoms of general disturbance. In some cases they are first observed within twelve hours after the fever has set in; in others, and more numerous cases, they show themselves on the second, third, or fourth day of the attack. The enlarged glands forming buboes are rarely numerous (vide statistics), and of a group only one is as a rule enlarged, attaining sometimes the size of a cocoa-nut, whilst others are but little enlarged. Suppuration rarely occurs in fatal cases, the toxic poison seldom admitting of sufficient time to reach that stage. *Petechiæ* distributed generally over the body are often observed, usually preceding a fatal issue.

Necrosis of skin.—Pustules commencing as sanguineous blebs varying in size from a nut to a hen's egg, followed by suppuration and necrosis of skin.

Plague has a special physiognomy having nothing in common

with other diseases; the eyes are suffused and retracted within the orbits, the aspect is haggard and apathetic, the patient looks stupefied as if intoxicated, and does not readily answer questions, but one is *not* struck with the gravity of the condition or the danger to life. Even the worst cases are apt to deceive the inexperienced and make him believe the case to be free from danger, when in reality it has only a few hours to live. How many cases can one call to mind of fine robust patients in this condition in the morning, found dead at the evening visit. There is still another class of patient met with chiefly at the beginning of the epidemic, who are suddenly stricken down and die in a few hours, without any of the external characteristic manifestations of the disease, the amount of the toxin produced being so great that the central nervous system is completely and rapidly overwhelmed.

It is in cases intermediate between the latter and an attack of ordinary intensity that the symptom of aphasia is so commonly observed. Curiously the histories of all these cases have been precisely the same. High temperature, the attack chiefly localised in the nervous system, delirium lasting a variable time, usually short, followed by complete loss of power to convert thoughts into words. Fortunately the majority of these cases recover the lost power rapidly, the thickened disjointed guttural attempt at speech, indicating the first favourable sign. In association with this condition in several cases there has been marked ataxia, shown by the feeble grip, the inability to perform purposive co-ordinate movements, either with the arms or legs; this also clears up rapidly as recovery advances. During the latter stages of the disease there has been one well marked case of right Hemiplegia. In this latter class of cases, Buboes have not been a conspicuous symptom.

Pulmonary.—Lastly, after the epidemic had reached its height, pulmonary disturbance has been the most predominating and fatal feature. It takes the form of catarrhal pneumonia and may be either primary or secondary. Its frequency has been about 1 in 5. Not a single case of primary pneumonia has recovered, and so far the same may be said of the secondary form.

Conjunctivitis.—Conjunctivitis has also been a frequent symptom; starting as a simple suffusion of the conjunctiva, followed by corneal ulcers, and often leading to destruction of one or both eyes.

Complications.—Plague is a disease marked by a very protracted convalescence. During this period complications of the most varied description are likely to develop, the most frequent are:—(a) Sloughing of the glands entire with the skin over them. (b) Arthritis, chiefly of wrists, ankles, knees, and elbows, which may be followed by suppuration. In one case the left knee-joint alone was affected. (c) Secondary pneumonia. (d) Pareses and paralysis, aphonia, aphasia, hemiplegia, imbecility. (e) Conjunctivitis (corneal ulcers, panophthalmitis). (f) Thrombosis. (g) Retention of urine. (h) Suppression of urine. (i) Pericarditis. (j) Metastatic Abscesses.—There is apparently no other.

Diagnosis.—Idiopathic fever attacking a large number of people at the same time, which is characterised by glandular swellings and by those grave symptoms of the nervous, blood, and biliary systems, which show themselves in an attack of plague.

Prognosis.—All cases complicated with (1) Primary pneumonia. (2) Extensive oedematous condition of skin over seat of Bubo. (3) All cases in which the attack centralises itself from the first in the nervous system end fatally, whilst rapid suppuration of buboes is looked upon as a favourable symptom.

Of five cases of abortion from Plague not one has recovered.

The prognosis is better in children than in men, and in men than women; of 260 deaths in the Brahampuri Hindoo Hospital there have been—males 89, females 146, children (under 10) 25; whilst from 3516 deaths from all hospitals there have been—males 1226, females 1727, children 563.

The high rate of mortality among females may be partially accounted for, first, by the fact that large numbers of the Hindoo men inhabiting the city are merchants, extensive travellers by sea; second, a much larger number, with the

chivalry common to the native mind on the outbreak of the epidemic, fled the city, panic-stricken, leaving their wives, children, and belongings to forage for themselves. The healthy and robust appear not only prone to contract the disease, but suffer from the most virulent forms, and die in as great proportion as those of weaklier frame and less sthenic constitution.

Mortality.—The mortality appears to have differed among the various castes and at different phases of the epidemic. Of the first 100 recorded cases in the Brahampuri Hindoo Hospital the mortality was 90 per cent. Of 100 cases recorded from the same source a month later the mortality was 83 per cent. Amongst the Borah community from 7th April to 11th June (Hajira Hospital) the mortality was 45 per cent. General Mahomedan Hospital, 61 per cent. Khatri and Mahomedan Hospital, 36 per cent. Khoja Hospital, 13 per cent.

From the above statistics it will be seen that the Hindoo caste suffered by far the worst; but considering the ghastly conditions of their existence, the only marvel is that the whole caste has not been annihilated.

That the mortality has been seriously aggravated by the lamentable ignorance and obstinacy of all castes in refusing to bring their sick early to hospital, no one can for a moment doubt; large numbers of cases have been admitted moribund, or have died within a few hours. Many have been admitted in the most loathsome condition, one poor wretch having suffered such frightful neglect that the whole of an enormous cervical bubo, extending from the left ear to the sterno-clavicular joint was found on admission to be filled with living maggots; children brought in with perforated corneal ulcers, men with enormous sloughing glands and all the horrors of the later stages, indicated the set resolution that no patient however ill should be brought to hospital until his condition was thought by his relatives to be hopeless if kept at home.

571 out of a community of 1500 Borahs were inoculated with Yersin's preventive serum, which undoubtedly helps to account for their low rate of mortality.

The mortality also varies considerably with the day of the disease on which the patient was admitted.

Of 100 non-inoculated cases from the Brahampuri hospital

Admitted 1st day	82 per cent. died
„ 2nd day	66 „
„ 3rd day	95 „

Thus the 3rd day is far the most fatal, and this experience has been endorsed at all the other patients.

Treatment.—(a) Preventive. (b) Curative.

(a) Preventive methods consisted chiefly in removal of the conditions which favour the development of the disease, and when established, the limitation of its spread. With regard to the limitation of its spread, the chief considerations were:—

(a) *Isolation* of the sick under the best circumstances.

(b) Disinfection of all articles or bedding used by the patient, and of the house in which he has lived.

(c) Preventive inoculation of serum antipesteux, prepared by the Pasteur Institute.

On account of the brief period of immunity conveyed by the usual dose of 10 c.c., it is extremely difficult to prove the value of this method of treatment. It has not been found possible to inoculate whole communities (every ten days) the communities object, in which case it is most accurate to ascribe the absence of plague to the immunising effect of the serum; nevertheless, it is an extraordinary fact that out of 721 persons who have been inoculated once only, up to the present, not a single case of plague has developed. These cases have all been registered and are composed of different castes living in different places.

Men of Borah community	380
Children do. do.	191
Village of Maska, men, women and children	110
Village of Bádá (16 miles from Mandvi) men, women and children	40

(b) Curative. As no other specific has hitherto been discovered for the cure of Plague, the treatment resolves itself into the carrying out of the general principles of medicine as applied to the treatment of symptoms arising in the course of the disease.

The stimulant method and the administration of Liquor Hydragryi Perchloridi have both been given the fullest trial and both have proved equally inefficacious in either controlling or checking the disease.

In order to arrive at some definite conclusion as to the value of various methods of treatment and especially to compare the results of the general in contrast to the special treatment by inoculation of serum antipesteux, I have collected 100 cases which were admitted to hospital between the 1st and the 4th day of the disease and treated by the usual methods, and I had hoped to have been able to inoculate 100 cases admitted under exactly the same conditions as those of the first 100, but the lack of serum at the critical time has rendered this difficult to accomplish.

Appended is a list of 30 cases inoculated and 100 cases non-inoculated. The mortality in the former is 60%, in the latter 83%, that is to say a saving of life of 23%, and although this is not as good a result as I had at one time anticipated, it is sufficient to indicate the right path and to act as a further stimulus in perfecting the only means we have at present of even influencing one of the direst diseases that ever afflicted humanity.

With regard to the action of the serum itself, by reason of the irregularity of the temperature curves in plague it is very difficult to determine exactly the modification which the administration of the serum produces. It is absolutely certain that in ordinary cases the temperature falls under the action of the first injection, that is to say, in the first 24 hours, and it is equally certain in many cases, that it never re-ascends. This fall is obtained whatever the day of the disease on which the treatment is commenced, unless the patient is moribund. The fall in temperature is often temporary even in those about to recover.

The most characteristic actions of serum (in cases of ordinary gravity) inoculated in the earliest stages of the disease are—
(a) Fall of temperature. (b) Amelioration of the general condition.

This, like the fall in temperature, is, in the majority of the

gravest cases, transitory, the symptoms again become serious, and the disease appears to run its course as if the serum had not been given.

The alteration brought about by the serum exercises an influence which is prolonged over the temporary improvement noticeable after the inoculation.

In cases treated early from the first to the second day, the progress of the disease and the intensity of the symptoms are diminished

When the first re-action of the serum is exhausted, the fever returns with less virulence and there is generally less stupor than before the commencement of the treatment. In cases which appear certain to die, the course of the disease seems to be stayed, and even if recovery does not take place, it nevertheless provides a most powerful resistance to the disease and one which may last a considerable time.

The decided action of the serum is proved in all cases where the patient does not die within 24 hours (an indispensable condition in order that the serum may have time to act) and I therefore submit that if the treatment by serum is ineffective in a certain number of the worst cases, it has an enormous power over those cases where the toxin poisoning is not of the gravest and where the disease does not run its most rapid course.

In the majority of these cases one is bound to admit that the recovery is due to the serum.

THIRTY CASES INOCULATED, ADMITTED FROM FIRST TO FOURTH DAY—MORTALITY 60 PER CENT.

DAILY REPORT OF INJECTION TREATMENT.

No.	Sex.	Age	Admitted to Hospital.	How long ill when injected.	Total quantity injected.	Result.	Bubo.	Remarks.
127	M	9	30/5/97	4 days	90 cc.	Discharged cured	Parotid, lt. groin, lt. cervicl.	
	M	35	30/5/97	4 days	105 cc.	Died 4/6/97	Right axilla	Primary Plague Pneumonia (a ward orderly)
135	F	15	1/6/97	1 day	120 cc.	Died 3/6/97	Right axilla	
136	M	8	1/6/97	2 days	150 cc.	Died 11/6/97	Right inguinal and femoral	
143	F	32	2/6/97	2 days	220 cc.	Discharged cured 11/6/97	Right groin	
149	F	13	2/6/97	4 days	190 cc.	Died 6/6/97	Lt. femoral, rt. & lt. cervical	Plague pustule, left foot
154	M	8	2/6/97	1 day	50 cc.	Died 4/6/97	Left axilla	Right and left feet swollen
158	F	40	3/6/97	2 days	140 cc.	Died 5/6/97	Left femoral	Pericarditis
165	F	45	4/6/97	2 days	170 cc.	Died 11/6/97	Right groin	
168	F	29	4/6/97	2 days	200 cc.	Died 23/6/97	Left femoral	Pneumonia, P.
169	F	30	4/6/97	1 day	160 cc.	Discharged cured 11/6/97	Left groin	
177	F	20	4/6/97	1 day	100 cc.	Discharged cured	Nil	
178	F	40	4/6/97	1 day	140 cc.	Died 9/6/97	Left femoral	
179	M	40	4/6/97	2 days	230 cc.	Died 8/6/97	Nil	
188	M	45	5/6/97	2 days	170 cc.	Died 9/6/97	Right inguinal	Suppression of urine
191	F	28	6/6/97	2 days	230 cc.	Died 13/6/97	Right groin	Pneumonia, P.

No.	Sex.	Age.	Admitted to Hospital.	How long ill when injected.	Total quantity injected.	Result.	Bubo.	Remarks.
195	F	25	7/6/97	3 days	140 cc.	Died 11/6/97	Left groin	
201	F	60	9/6/97	3 days	120 cc.	Died 12/6/97	Right axilla	
207	F	21	11/6/97	3 days	40 cc.	Discharged cured 23/6/97	Right groin	Iritis
210	M	45	9/6/97	1 day	200 cc.	Died 14/6/97	Nil	Pneumonia, P.
215	F	30	15/6/97	3 days	90 cc.	Discharged cured	Nil	
322	F	40	20/6/97	4 days	110 cc.	Discharged cured	Right groin	
223	F	10	20/6/97	3 days	100 cc.	Discharged cured 23/7/97	Right groin	
225	F	33	20/6/97	1 day	150 cc.	Died 23/6/97	Right groin	A ward ayah. Pneumonia
227	F	45	22/6/97	2 days	120 cc.	Died 24/6/97	Left submaxillary	
Khoja Hospl.	M	11	9/6/97	4 days	100 cc.	Discharged cured 19/6/97	Left groin	
Salaye Hospl.	M	55	23/6/97	1 day	150 cc.	Died 28/6/97	Right groin	
231	M	50	23/6/97	1 day	90 cc.	Discharged cured	Left axilla	
Khoja Hospl.	F	18	19/6/97	2 days	110 cc.	Discharged cured	Left groin	Multiple Synovitis
"	F	17	19/6/97	2 days	110 cc.	Discharged cured	Left groin	Synovitis left ankle

100 NON-INOCULATED CASES ADMITTED FROM 1ST TO 4TH DAY.

Mortality, 83 per cent.

No.	Sex.	Age.	How long ill.	Admitted to Hospital.	Bubo.	Result.
1	M.	30	2 days	25th May	Nil	Died
2	M.	32	2 days	"	Nil	Died
3	M.	35	4 days	"	Lt. groin	Died
4	M.	50	2 days	"	Rt. groin	Died
5	F.	18	2 days	"	Nil	Died
6	F.	18	3 days	"	Nil	Died
7	F.	50	3 days	"	Nil	Died
8	F.	30	Nil	"	Nil	Died
9	F.	18	Nil	"	Nil	Died
10	M.	20	2 days	"	Nil	Died
11	F.	70	2 days	"	Nil	Died
12	F.	32	2 days	"	Lt. axilla	Died
13	F.	30	3 days	26th May	Lt. groin	Died
14	M.	70	3 days	"	Nil	Died
15	F.	35	4 days	"	Nil	Died
16	M.	25	3 days	"	Nil	Died
17	M.	55	3 days	"	Nil	Died
18	F.	60	3 days	"	Nil	Died
19	F.	23	2 days	"	Lt. groin	(Old) dischgd
20	F.	40	3 days	"	Lt. axillary	Died
21	M.	50	2 days	"	Lt. axillary	Died
22	F.	10	2 days	"	Lt. parotid	Discharged
23	M.	85	3 days	"		Died
24	M.	20	2 days	"	Lt. axilla	Died
25	M.	80	4 days	"	Rt. axilla	Died
26	F.	32	3 days	"		Died
27	F.	20	2 days	"	Rt. inguinal	Discharged
28	M.	19	3 days	"		Discharged
29	M.	60	2 days	27th May	Lt. groin	Died
30	M.	30	2 days	"	Rt. axilla	Died
31	F.	22	4 days	"	Rt. groin	Died
32	F.	16	3 days	"	Nil	Died
33	F.	13	2 days	"	Rt. axilla	Discharged
34	F.	14	2 days	"	Rt. parotid	Died
35	F.	30	2 days	"	Nil	Died
36	M.	10	2 days	"	Rt. groin	Died

Original Communications.

<i>No.</i>	<i>Sex,</i>	<i>Age.</i>	<i>How long ill.</i>	<i>Admitted to Hospital.</i>	<i>Bubo.</i>	<i>Result.</i>
37	F.	15	4 days	"	Rt. groin	Discharged
38	F.	20	4 days	"	Rt. axilla	Died
39	F.	50	2 days	"	Lt. parotid	Died
40	F.	38	1 day	"	Rt. groin	Discharged
41	F.	40	2 days	28th May	Rt. groin	Died
42	M.	80	2 days	"	Rt. axilla	Died
43	F.	25	2 days	"	Rt. groin	Died
44	F.	30	2 days	"	Rt. groin	Died
45	F.	6	2 days	"	Rt. groin	Died
46	M.	6	2 days	"	Rt. groin	Died
47	M.	14	6 days	"	Pneumonia	Died
48	F.	4	2 days	"	Rt. groin	Died
49	M.	10	3 days	"	Nil	Died
50	M.	25	4 days	"	Nil	Died
51	M.	35	2 days	"	Nil	Died
52	F.	16	1 day	"	Lt. groin	Died
53	F.	50	1 day	"	Nil	Died
54	M.	11	4 days	"	Rt. axilla	Discharged
55	F.	35	1 day	"	Rt. groin	Discharged
56	M.	45	2 days	"	Nil	Died
57	F.	30	2 days	"	Rt. axilla	Died
58	F.	25	4 days	"	Rt. inguinal	Discharged
59	M.	60	4 days	"	Rt. groin	Died
60	F.	18	6 days	"	Nil	Died
61	M.	21	3 days	"	Lt. groin	Died
62	F.	12	1 day	"	Lt. groin	Died
63	F.	25	2 days	"	Rt. groin	Discharged
64	M.	10	1 day	29th May	Rt. axilla	Died
65	F.	5	4 days	"	Rt. groin	Died
66	M.	35	1 day	"	Maxillary	Died
67	F.	30	1 day	"	Lt. groin	Died
68	M.	13	1 day	"	Rt. groin	Died
69	F.	20	2 days	"	Lt. groin	Died
70	F.	8	4 days	"	Rt. groin	Died
71	M.	22	3 days	"	Rt. groin	Died
72	F.	15	2 days	"	Lt. groin	Died
73	F.	28	3 days	"	Nil	Died
74	M.	9	3 days	"	Rt. cervical	Died
75	F.	20	1 day	"	Lt. groin	Died
76	M.	35	2 days	30th May	?	Died

Epidemic Plague at Cutch Mandvi.

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<i>No.</i>	<i>Sex.</i>	<i>Age.</i>	<i>How long ill.</i>	<i>Admitted to Hospital.</i>	<i>Bubo.</i>	<i>Result.</i>
77	F.	50	4 days	"	Rt. & Lt. groin	Discharged
78	F.	50	1 day	"	Nil	Died
79	F.	42	2 days	"	?	Died
80	M.	9	4 days	"	L. gr., L.c., Lt. hand & foot swollen	Discharged
81	F.	20	1 day	"	Lt. groin	Died
82	F.	7	4 days	"	Tenderness Lt. groin	Died
83	F.	40	2 days	"	Lt. groin	Discharged
84	F.	48	3 days	"	Lt. axilla	Died
85	M.	41	2 days	"	Lt. groin	Discharged
86	M.	40	1 day	"	Lt. groin	Died
87	M.	40	2 days	31st May	Lt. groin	Died
88	F.	50	2 days	"	Nil	Died
89	M.	25	1 day	"	Lt. groin	Died
90	F.	14	2 days	"	Lt. axilla	Died
91	M.	6	2 days	"	Lt. cervical	Discharged
92	M.	8	1 day	"	Lt. inguinal	Died
93	M.	18	1 day	"	Lt. inguinal	Died
94	F.	35	3 days	"	Lt. groin	Died
95	F.	20	1 day	"	Rt. groin	Died
96	F.	40	3 days	1st June	Nil	Died
97	M.	20	3 days	"	Nil	Died
98	F.	70	2 days	"	Rt. cervical	Discharged
99	F.	25	3 days	"	Rt. cervical	Died
100	F.	35	2 days	2nd June	Rt. groin	Died

THE FUTURE OF HEALTH APPOINTMENTS:
A SKETCH OF A STATE MEDICAL SERVICE.

BY HERBERT MANLEY,
MEDICAL OFFICER OF HEALTH, WEST BROMWICH.

ONE of the most widely extended of modern cries among the senior men of the Public Health Service is the reiterated demand that Medical Officers of Health should be whole time men, by which apparently is meant that they should be specially trained for the service, and that they should have devoted the whole of their professional career to the practice of sanitation in some form or other. The idea is by no means a new one, only with this difference, that the tendency to specialise was less marked in former times, and that some experience of men and things was considered an essential addition to the classroom and the laboratory.

When Dr. Rumsey published his *Essays on State Medicine* in the year 1856 he naturally took as the basis of his State Medical Service the only local service to hand, viz., the Poor Law. Commencing with the Poor Law District Medical Officer, he proposed to assign to him such an aggregation of offices as would erect his position into that of a purely state-paid medical officer. He was to be Medical Officer of Health, an office not then invented, Superintendent Registrar, or even in some cases District Registrar, Medical Jurist or Coroner's Assessor, Analyst, and Public Vaccinator, together with some loosely-defined duties in connection with lunatic asylums, hospitals, etc. To those who are curious in such matters the essays afford excellent reading, but it is not my intention to quote them further, but merely to adopt as far as modern circumstance permits, the line of thought of that distinguished scientist.

I cannot imagine that in attempting to construct a state medical service at the present time anyone would select the Poor Law as a basis for arrangement, nor do I propose to do so.

Since Dr. Rumsey wrote, the Local Government Board has arisen with a universal if not complete sanitary service in its train, and I venture to think that in taking this as a basis I shall be able to show that it is possible by judicious amalgamation to increase its efficiency.

It may at once be conceded that there are two classes of M.O.H. who are so fully occupied and as a rule so adequately paid at present that they do not come within the scope of my suggestions.

1. *County Medical Officers.*—To the best of my knowledge there are now thirteen of these officers who are employed solely by their authorities. These are Cheshire, Derbyshire, Durham, Essex, Lancashire, London, Northumberland, Shropshire, Staffordshire, Surrey, Worcestershire, Yorkshire (West Riding), and Glamorgan. In Essex and Worcester advantage has been taken of the permission to use the services of the County M.O.H. as M.O.H. for a subordinate district.

It will at once be obvious that an Officer charged with the Sanitary supervision of an entire county is sufficiently occupied without adding to his statutory duties.

2. *Medical Officers who either from the size, character, or area of their districts are already occupied and adequately remunerated for their whole time.*

a. *Urban.* In this class are to be reckoned the majority of towns in the first and second classes of the Registrar General, but with a minimum salary of £400 per annum (commencing) and running up to £1000 a year. In such towns as Birmingham, Liverpool, Leeds, etc., the duties which I am about to propose to tack on to the Sanitary Department could well be entrusted to an Assistant M.O.H., and the offices thus created would provide an admirable training school for candidates for the higher offices. There are however towns towards the bottom of this class which could well increase the salary of a suitable officer in the ways I am about to describe.

b. The large combined rural districts, of which there are some 25 to 30, with salaries ranging from £300 to £1000 per

annum ; it is most important that no inducement should be given to the component authorities to secede from their combination, and these with other rural authorities will require separate consideration.

The authorities to which my contention will more especially apply are the urban districts, nearly 100 in number, in which the salaries range from £100 to £250 per annum. In some of these towns the amount paid, even though possibly it may be commensurate with the work done, is wholly inadequate to the sanitary needs of the position. Towns with a crowded population of 60,000 up to 90,000 cannot but be ill served for such a sum as £130 or even £200 per annum. My own feeling is that the more enquiry is made into the sanitary condition of the smaller Boroughs and the Urban Districts the more apparent it will become that there is grave need for the employment of sanitarians who are educated and experienced, and who shall be sufficiently remunerated to place them beyond the necessity of private practice and sufficiently secured in their posts to resist local insanitary influences.

There still remain those minor urban and rural districts with health appointments of less value than £100 per annum. Nothing is to be gained by the retention of these appointments, and either by judicious combination, which should be ratified by Provisional order and not dissolved except by the same means, or else by strengthening the appointment they should be brought into line with the rest of my proposals.

Before entering upon any detailed account of the cognate duties of the Health department, a few words upon the present position of the service need no excuse. The advocates of the whole time M.O.H. have reason on their side, but in their anxiety to benefit the public they are in danger of doing scant justice to a number of public servants who have served a long apprenticeship, and who are worthy of much consideration, while at the same time there will be a danger that, unless the question of salary is safeguarded, there will be no adequate return for the expensive training now insisted upon.

I am well aware that in suggesting that whole time appointments and fixity of tenure should go hand in hand, I am putting forward a counsel of perfection, but the real object of this essay is to show how this may be done with the least possible disturbance of existing interests and for the benefit of the public health.

1.—The first auxiliary function of the M.O.H. is the administration of the Isolation Hospital, and even in those towns in which there is a Resident Medical Officer, or several, at the Hospital there will be need for some supervision by the Health Department. Of course in the larger towns the resident appointment will command the services of younger men for a short time, but in the smaller towns the daily visitation of the hospital will properly fall to the M.O.H. Some are paid by case and others by salary; in some cases the hospital is under the care of a medical man other than the M.O.H.

In conjoint hospitals erected under the Infectious Hospital Act the resident system is the best.

The duties of daily attendance upon an Isolation Hospital are fatal to success in private practice and dangerous in the practice of midwifery especially, and it is but fair that the Health Authority should engage the services of one who is not in practice, and that a fair addition to the salary should be made instead of the precarious method of paying by case.

It is worthy of notice in connection with this question that authorities are given a perfectly free hand as to the appointment and payment of the medical staff of an Isolation Hospital in the classification expenses under Sec. 17 of the Isolation Hospitals Act.

2. *The efficient performance of Vaccination* —Up to the present time vaccination, where it is not entirely suspended, has been in the hands of the Guardians of the Poor. These bodies do not possess any other claim to the exercise of Sanitary Measures, and the opinion has recently been strongly expressed that this measure of preventive medicine should now be entrusted to the Sanitary Authority to whom it more logically belongs.

It is no part of this paper to emphasise or even to discuss the true value of vaccination as the preventive against epidemic smallpox. But it is worthy of remark that all the other means which have been suggested for its repression are under the control of the M.O.H., and that in the case of vaccination alone he is absolutely powerless.

In connection with this suggested change it must be remembered that at the time that compulsory vaccination was entrusted to Boards of Guardians, they were the only existing bodies who represented the present widely diffused system of local self-government. If the work were now to be entrusted to Urban and Rural District Councils with a power of supervision and control by the County Councils, there would be no difficulty in bringing it into line with the other measures of preventive medicine, and possibly to meet the present crisis as regards payment a remuneration based upon population or area would more fairly meet the case than the present irregular system of grants. The adoption of an extended age limit for vaccination, of stated periods for general vaccination, and the insistence upon re-vaccination in times of epidemic are all measures which would be more easily worked by a Sanitary Authority than by a Poor Law Board, and the stigma of pauperism would be avoided.

3. *The Registration of Births and Deaths.*—For registration purposes England and Wales are divided into 634 districts and 2,092 sub-districts. At the time these districts were created there was apparently no definite rule as to size or population in the minds of the creators. The areas vary from 32 acres in Whitecross street, Holborn to 182,800 acres at Bellingham in Northumberland, while the populations range from 181 in Aldbrough in Yorkshire to 118,000 in Kensington. When these districts were formed it was the opinion of the authorities that the duties of the office would be best performed by the appointment of the District Medical Officers, and in 1839 there were 527 Medical Registrars; by the year 1853 there remained only 319, and probably at the present time, though I have been unable to lay my hand on the statistics, there are scarcely any.

The causes of this change are not far to seek ; Poor Law Medical districts and registration sub-districts are not co-terminous, the position of Superintendent Registrar is added to the emoluments of the Clerk, who, like most permanent officials, is master of the situation, the Doctor is rarely a *persona grata* with the guardians who appear to hamper him in his duties as far as possible, and lastly, there is something decidedly incongruous between registration and general practice.

It would obviously not be in the interests of the prevention of crime and the promotion of accuracy in registration that any man should be in a position to revise his own death certificates. The question of death certification is too long to enter upon in this place, but it may be permitted to remark that if we are to have a correct record of deaths, the registrar must be in a position to insist upon the official nomenclature of disease being more rigidly observed.

The duties of registrar naturally lead to the next point in the list of possible offices which is germane to the last, *i.e.*,

4. *Medical Jurist and Coroner's Assessor.*—So much has recently been said and written on the subject in connection with the revision of the present unsatisfactory system of registration that little remains to add.

As regards the office of coroner, I incline to think that except in the case of the duplicate qualification, the office is better out of the hands of the medical profession ; experience goes to show that the possession of a medical degree is no proof of an ability to gauge the value of evidence, and seeing that an inquest is not merely an enquiry into the cause of death, but also possibly the initial point of criminal proceedings, the guidance of a lawyer is most desirable ; this can only be obtained by a medical coroner at his own expense.

On the other hand, it may fairly be doubted whether the average solicitor or barrister is capable of deciding the nice points of medical science or of ascertaining the cause of death apart from medical evidence which, on account of the cost, is too rarely called.

According to the present law of coroners the office is not bound by any restrictions as to qualification, even as regards the deputy, as formerly ; the result is that the office in many places is made a reward of political or other services rather than bestowed for merit, and the evidence of experts not being called for, the verdicts of "Natural Causes" and the "Visitation of God" continue to insult the credulity of scientific mankind. I would go further, and say that a large number of this class of inquests need never be held, and would not be held but for the fees payable in respect of them. The best evidence of this is where a district is transferred from salary to fees per inquest. In some instances this increase has been known to amount to 100 per cent., and the greater proportion of such cases are not accurately returned, and could be much more accurately dealt with by a Medical Registrar legally empowered to do so.

There is however a further side of the relation between the coroner and the profession, and that relates to the skilful and accurate performance of the *post mortem* examinations ; at the present time this duty, often one of some difficulty, is entrusted either to some personal friend of the coroner or to any haphazard practitioner in the immediate neighbourhood of the death. Many such men have never been taught to make a *post mortem* examination, and are wholly ignorant or oblivious of the pathological appearances for which they are to seek, and upon which they are to give "expert" evidence.

It is surely in the public interest that so important a duty should be entrusted to those who by previous knowledge and practice are fully competent to undertake it and who do not rely upon the services of the nearest hospital resident or the coroner's officer. "*Inde cadunt partes ex foedere.*" Juv. vii., 123.

It is perhaps a fair question for debate whether such duties should more properly be assigned to the M.O.H. or to the Police Surgeon ; but there are some boroughs in which the duties of Police Surgeon are combined with those of the M.O.H. (*e.g.*, Leicester) ; this combination does not commend itself to me as it introduces the element of private practice into the appoint-

ment and may require the M.O.H. to dispense or keep an open surgery. It would perhaps be best to assign these duties to either officer if out of practice.

5. *Medical Officer to the School Board.*—As far as I can ascertain it is the practice of the average School Board to obtain the medical certificates and other scientific information which they require at the expense of any person other than themselves; indeed I have been told, but I think it is not quite correct, that they are liable to be surcharged for money laid out upon the medical profession. Without reference to the London School Board which has a medical officer (who nominally gives his whole time to the work), there are scattered over the country a number of Boards who find that the need for revising the certificates of private practitioners, the periodical inspection of schools for causes which hardly come within the purview of the M.O.H., and the examination of pupil teachers, are all matters in which it pays to employ an independent medical man. I think the best man is the M.O.H.; the amount may be trifling, (indeed in a population of 60,000 it barely reaches £10 per annum), but a principle is involved.

6. *Certifying Factory Surgeon.*—The tendency of recent factory legislation has been to place the conditions affecting the health of the workers in factories and workshops under the control of the Health Officer, and in the compilation of a complete State sanitary service, the fitness of young workers for their employment, together if possible with their compulsory re-vaccination, should not be omitted. There would of course be no wish to interfere with any existing appointments, but with an ex-M.O.H. (Dr. Whitelegge) at the head of the department an assimilation of the services may fairly be hoped for.

7. *Laboratory work.*—It remains to speak of the labours of the Analyst and the Bacteriologist, whose duties have frequently been combined with those of the Health Officer. This is a combination which does not appeal to me. It is true that among the ranks of the service there are many very competent chemists and some excellent bacteriologists, true also that

the inspection of the food supply, the importance of bacteriological diagnosis and the preparation of antitoxins is increasing, but I think that these things should be left to the laboratory, and that the M.O.H. will find more than enough outside in dealing with disease on broader lines.

I have now dealt with all the appointments which I believe it possible to combine with the Health department so as to create a homogeneous state medical service, with the exception of the Police Surgeon, for the exclusion of which reasons have been given. It may be objected that the duties fall under the control of different state departments; but even in his present position the Health Officer is liable to come in contact, not to say conflict, with more than one department. In the large towns it will be necessary to appoint one or even more assistant Health Officers, as is already the case in Liverpool and Glasgow. In the next range of towns, the work will fully occupy the time and attention of one man, and in the large rural and combined districts the County Council will be in a position to appoint to the auxiliary duties, or so to arrange the work that it may be efficiently done.

The gradual abolition of the part time M.O.H. is not received with favour with many of the older school of Health Officers, but it is an inevitable reform, and it seems to me to be in the best interests of both the public and the profession that the appointment should be so strengthened as to command the respect of both.

In order to confer upon the office the security which must of necessity be given to one whose duties bring him into daily conflict with all sorts of interests, the holder of it should possess "fixity of tenure," that is to say, he should be appointed for life, subject to good behaviour, and only removable by consent of the Local Government Board, thus assimilating his position to that of a Poor-Law Medical Officer. This has long been the subject of agitation among M.Os.H., but opinions have differed widely as to the means of bringing it about.

There are at the present time about 1,300 Health Officers in

England and Wales who are under the direct control of the Local Government Board, and other 300 who are not, making a total of nearly 1,600. Of these, only about 140 are whole time men, while there are but 500 who take sufficient interest in their health work to associate themselves with any association for Sanitary Science. To give fixity of tenure broadcast to every M.O.H. would never enter the mind of any responsible Government official, nor do I think it would be fair to ask it.

The gift must be accompanied by certain guarantees. First, as regards qualification, I must confess that I am somewhat in sympathy with the men who, having acquired a University degree, paid £5 for registering a Diploma in Public Health and spent hours over Bacteriology, when they apply for a Health appointment worth perhaps £250 a year, find that District Councils are very like Gallio and care for none of these things. The Health diploma is gradually becoming more extended in spite of the increasing number and stringency of its requirements, and every effort should be made when the time comes to remodel the Law relating to Public Health to secure an extension of the districts in which a Health qualification is essential. Much good work has been done in the Sanitary Service by men who have not had these advantages, and it has been said, with some truth, that the Poor-Law Medical Officer with a taste for Public Health makes a very good Health Officer. On the other hand, I do not think that a purely academic sanitarian will be as successful in the administrative details of his duties as one who has himself gone through the trials and difficulties of the general practitioner and thus learned to avoid those conflicts which seem periodically to occur between the practitioner and the M.O.H., and which in most cases ought never to have arisen.

An attempt has been made to confine the privilege of fixity of tenure to whole time officers, but I believe that even the Local Government Board are well aware that there are men among the ranks of the general practitioners who are rendering efficient sanitary service. This opinion will, however, ultimately prevail, and in that case there should be such a combination of offices

as I have foreshadowed with a minimum reasonable salary commencing at something like £400 a year for the principal officers, with smaller commencing salaries for the assistants in those towns where the work requires them. It has been said that these suggestions will be unfair to those M.O.H. whose appointments come in the lowest category, and who get about £50 a year on the average, but it would be quite impossible in my opinion to contend for fixity of tenure in such cases, unless pressure could at the same time be brought to bear upon the authority to awake to their sanitary shortcomings.

Of course the rights of existing medical Officers, whether appointed yearly or for a term, must be safeguarded while they are alive, but I for one look forward to the compulsory possession of the Health Diploma, the compulsory combination of rural districts into suitable areas by the agency of the County Councils, and the provision of a race of Health Officers, who being the servants, not of the Local Authorities, but of the state, will do the work for which they were appointed without the fear of dismissal or the need to curry favour for an annual re-election by a small board of local property owners.

If good men are to continue to take up Sanitary work, not merely as a novelty, but with a knowledge of their predecessors, and a sincere desire to follow in the footsteps of Chadwick, of Parkes, of Simon, of Ballard, and many more who are still with us, assurance must be given them that they will be permitted to live and not be thrown upon the charity of the world by the passing caprices of a District Council.

Such a reform would be of more value to us as medical officers than any superannuation scheme, for, once secure in our offices and fairly remunerated for our services, we ought at least to be able to provide pensions for ourselves.

IDIOPATHIC SALIVATION.

BY WALTER R. JORDAN, M.D.

EXTRA ACTING PHYSICIAN TO THE BIRMINGHAM AND MIDLAND
FREE HOSPITAL FOR SICK CHILDREN.

ON the 31st December, 1896, a boy 4 years old was brought to my out-patient room by his mother, who sought advice on account of the nuisance to herself and him of the constant dribbling of saliva from his mouth. The nuisance complained of was obvious, the boy's clothes for some distance below his neck being thoroughly soaked; and the statement that he wet his clothes right through in this region was confirmed by a moment's examination.

The child, it was stated, had "always" dribbled, very much so when cutting his teeth, since which time it had never ceased. The dribbling continued at night, so that his pillow was wet, but to a less extent, and the amount of saliva that escaped varied from time to time.

The boy appeared quite happy and, but for the salivation, perfectly healthy. He was said to have good health, to eat well, and to have no digestive trouble, but to be always thirsty. He had ordinary diet, and was very fond of porridge. He was intelligent for his age, and talked plainly. Examination disclosed no latent mischief or defect general or local. The mucous membrane of his mouth was healthy; the left tonsil was perhaps slightly enlarged; and of the teeth, which were cut normally, the lower præmolars were already decaying. Four other children were quite healthy, and had no tendency to salivation.

Three months later, another boy, aged $2\frac{1}{2}$ years, was brought to me, who, in his appearance and the tale told of him, was an exact counterpart of the former. He, too, had dribbled very much during dentition, a process which began when he was four months old and was completed eight months later. The dribbling never after ceased, but was not given

much attention to till he was two years old. Since then it had got worse, and it was still getting worse, though it varied in degree. His clothes were saturated. At one time it had continued through the night, but that had ceased. His general health was said to be very good, except that when he had a cold it "flew to his tonsils," and that his appetite was not very good. He, too, had fed much on porridge. His teeth and the mucous membrane of his mouth were in a healthy state, but his tonsils, especially the left, were much hypertrophied. No other lesion of any sort was discovered on examination. He was intelligent enough; did not yet speak plainly, but was getting on.

These two boys were typical examples of a class of cases of salivation which remain after the separation of all cases due to ascertainable causes, to be grouped together as "idiopathic." Idiopathic salivation is a condition of some rarity (personally I have met with these two cases only) and of such interest as attaches to an affection not dangerous, but the cause of constant discomfort to the sufferer and those about him. Whether from its rarity or insufficient interest, references to it in English medical literature are hard to find. Finlayson, indeed, reports a case of "Idiopathic Salivation in a Child," but it is by no means on all fours with those I have just described. He gives a reference, however, to Gerhard's *Handbuch der Kinderkrankheiten*, Bd. iv., Abth. ii., where the condition is described. H. Bohn, the writer of the section, speaks of the salivation as having its origin at the age of three or four months, with the customary salivation of dentition, and not thereafter ceasing. He refers to cases in children of two to eight years old, of good physical and mental development, who had either successfully got through the ordinary complaints of childhood, or been ill seldom and never seriously. The salivation was apparent for the most part only in the erect position, and was therefore limited to the day and ceased at night. One child only dribbled in sleep as well. Emotions of the most varying kind diminished it. In one case a sort of control was

established, the salivation only appearing on occasions which absorbed the entire attention. Iron was of undoubted influence on this form of salivation ; but, although some of the children were anæmic, Bohn thinks it inadmissible to attribute to the anæmia alone either the occurrence of the cases or the curative value of iron. He looks on the condition rather as having the features of a neurosis. The intermittent character of the salivation, its subordination to psychical influences, its peculiarity of either more and more abating with the progressive development of the body, or showing itself amenable to remedial drugs, point to a peculiar and isolated affection of the salivary-gland nerves in the developing organism of the child. The shortness of the period of observation did not permit of his seeing whether the salivation or the tendency to it ceased spontaneously at any particular age. It would, then, he points out, run parallel to many forms of enuresis in children, in which, with complete soundness of the rest of the body, a disturbed nervous impulse prevails ; likewise, in a very narrow province, which commencing puberty so often spontaneously adjusts.

In both my own cases the salivation continued during sleep ; in other points, however, they correspond with those of Bohn. As regards duration, I can, unfortunately, add nothing to his statement. My second case, after getting over an attack of tonsillitis in April, contracted diphtheria in May, and died after a few days' illness. My first case remained under observation till June 14th, when he ceased to attend. Recently I tracked him to his native court in Aston, and found an attack of measles was the cause of his failure to come to the hospital. He had quite recovered from this, and the salivation was still going on.

In this case I used belladonna persistently for five months. It relieved at first, but after a week or two the dose had to be increased, and this continued, cessation for a week or so on increased dose, with subsequent toleration and reappearance of the symptoms, till on May 26th mxx. of tr. bellad. were

being taken three times a day and the salivation was in undisturbed progress. I then put him on iron, but the observation was shortly interrupted as above stated ; and the progress of the second case, in which I also used iron, was quite too brief and complicated for any evidence of the value of the drug to be obtained from it.

An interesting point in these cases appears to be how far the salivation is actually the result of an increased flow, and how far it is due to a failure to acquire the habit of automatically swallowing the saliva. Bohn says nothing about the amount, and appears to regard it as undoubtedly due to increased secretion ; but the presence of hypertrophied tonsils in one case may indicate that a child who finds swallowing a more or less difficult process, may simply fail to acquire the automatic swallowing habit.

The case reported by Finlayson is of a different nature, in that the salivation appeared rather suddenly at the age of six. The child was otherwise strong and healthy, was bright and intelligent ; had had at times shortly before she came under observation pains in the belly, and even occasionally slight sickness and diarrhoea, ascribed to some error in diet. The discharge of saliva measured about 30 oz. in the 24 hours ; but in addition to this, all her clothes were found quite wet in the morning when she was dressed. She was treated with belladonna, and was well in a month from the beginning of the treatment, the salivation having existed from three weeks to a month before treatment was begun.

This case appears to me to resemble very closely many cases of pyrosis. There is evidence of sufficient gastric or other abdominal irritation to account for the reflex secretion of saliva, which is the essence of most if not all cases of pyrosis. Had the fluid, instead of escaping by continuous dribbling, been retained for a time and then ejected in gushes, the aspect of pyrosis would have been completely presented.

BACTERIOLOGY DEPARTMENT OF MASON COLLEGE AND THE CITY COUNCIL.

It is probably known to the majority of our readers that in June last the Mason University College completed with the Health Committee of the Birmingham City Council an arrangement under which the Bacteriology Department of the College undertake to examine the inflammatory exudate in cases of doubtful diphtheria. If Loeffler-bacilli are present the College will send to the Doctor attending the case, if he wishes it, a supply of antitoxin and a syringe with which to administer the same. All arrangements for the bacteriological diagnosis of diphtheria and for its treatment by antitoxic serum are complete therefore, as far as the city of Birmingham is concerned.

Since June 24th, on which day the agreement came into force, there have been 33 specimens of exudate from suspected throats forwarded to the College for examination. Of these, 16 have revealed the presence of Loeffler's bacilli, but in only two have the characteristic bacilli been alone; in 14 they were accompanied by micrococci of different sorts, and sometimes by yeast-torulæ. In 17 cases micrococci (of different kinds) only have been found. A supply of antitoxin has been sent out on demand in 24 cases, in 8 of which, however, no membrane was transmitted for examination.

On request, a tube containing a properly sterilised swab will be forwarded to any medical man practising within the City boundaries, so that the proper material may be obtained with the smallest practicable amount of trouble and the greatest probability of safe and uncontaminated transmission. We may perhaps here take the opportunity of mentioning that, when required for examination, membrane or secretion should never be taken from a throat which has recently been cleansed with antiseptic applications or gargles; but if possible a bit of the *membrane* present should always be sent, and that to obtain this, a good light falling on the patient's fauces is indispensable.

It will be seen that there is a fair amount of material forthcoming for investigation. The next point is to render this material useful so that definite conclusions may be drawn from its examination combined with careful clinical observation of the patients from whom it comes. A great deal could be done in this direction if those Doctors who send specimens to the College could find time to keep a few brief notes of the cases and would kindly forward them to the Bacteriology Department. The notes ought, we think, to have special reference to the following points—(1) Whether paralysis ever comes on in a case returned as presenting micrococci only. (2) Whether any general reaction occurs after the injections. (3) Whether cases returned as showing micrococci only are ever fatal, and if so, whether they are fatal through toxæmia or by producing suffocation through excessive extension of the membrane. (4) Whether albuminuria occurs, with a view to determining whether this symptom be met with in cases of micrococcal as well as in bacillary infection. (5) The general effect of the injections upon the course of the malady.

It is, of course necessary to bear in mind that well-formed membrane may result from inflammation due to micrococci as readily as from an inflammation produced by the *Loeffler-bacillus*; of this fact several specimens lately sent to the College have given ample demonstration. In a case recently under our care, indeed, a well-marked fibrinous or membranous exudate yielded on cultivation a yeast-fungus, and no other micro-organism. All that is necessary for the formation of a fibrinous exudate on a mucous membrane is that the inflammation shall be sufficiently severe to destroy the mucous cells to a considerable extent. The mere naked-eye appearance of an inflamed throat is not, therefore, sufficient to decide whether the inflammation is due to the *Loeffler-bacillus* or to other micro-organisms, and it would be the function of a "collective inquiry," such as has been proposed in this article, to determine whether or not some of the well-marked clinical characteristics of "diphtheria," may be shared by a disease produced by microbes other than the *Loeffler-bacilli*.

It is to be hoped that an arrangement may soon be effected by which specimens coming from beyond the City boundaries may likewise be examined. Such an extension would certainly prove of use to many patients and would increase the probability of valuable information being gained on the questions mentioned above.

REPORTS OF CASES.

A CASE OF OXALURIA COMPLICATED WITH HÆMATURIA, WITH REMARKS.

BY W. J. MCCARDIE. B.A., M.B., B.C. CANTAB,
SURGICAL CASUALTY OFFICER TO THE GENERAL HOSPITAL, BIRMINGHAM.

I WAS consulted some little time ago by a gentleman aged about 45, respecting the presence of blood in his urine. The family history was good except for the fact that the patient's father, aged 60 and odd years, suffers from Diabetes Mellitus. The personal history was also good, since he had never suffered from any serious illness, though he thought himself a rather gouty subject. His habits and diet had always been temperate. He was rather a small meat-eater, but consumed somewhat large quantities of carbohydrate food and sugary substances, besides drinking much tea; was very fond of vegetables, especially of rhubarb and spinach, of which the former was in season and he had partaken freely.

For the last two or three years he had noticed that his urine had been high-coloured and acid, often somewhat subnormal in amount and irritating in quality, leading to some increased frequency of micturition, so that there was often need to rise once in the night. The bowels are regular, the tongue is scantily covered with creamy fur, and on questioning he admits that he has a little discomfort after food. He is rather stout and pale, has not felt well for about a year, says that he has had

eczema on his legs, but no symptoms of gout were elicited ; is nervous, irritable, often feels disinclined to work, and tired.

About six months ago patient began to be troubled with dull aching, constant discomfort, sometimes lately almost amounting to pain in the loins and back, not worse on either side, at any particular time, or after special exertion. This trouble has since continued, and together with the Hæmaturia was the cause of his complaint. Soon after the onset of the lumbar aching he consulted a medical man, who told him that he had uric acid in his urine, and treated him for that condition, but no improvement resulted.

On the day before I saw him, and for the first time, he had noticed that his urine was reddish black ; when next passed it was clear, and a specimen of this was found to be high-coloured, very acid, s.g. 1030, containing neither albumen nor sugar. There had been no special circumstances that patient knew of to account for the hæmaturia. On physical examination there was no pain on deep pressure or sharp percussion over either kidney, and neither of them was palpable.

Nothing else of special interest was noticed and a placebo was ordered. Next day he called with a specimen of urine, containing bright red blood, of s.g. 1030, strongly acid, giving a cloud of albumen which was estimated as 0.75 per cent., no sugar, urea 2.8 per cent. The total amount of urine in twenty-four hours was unknown, but probably subnormal. Microscopically there were found in the field of view numerous red blood cells, a few large and many small oxalate of lime octohedral crystals, but no casts were seen.

On standing there were deposited at the bottom and adhering to the sides of Esbach's tube in many and thick clusters, stained yellow crystals, which the microscope showed to consist of oblong plates of all sizes, some being very large and almost square, others long and narrow. Also were seen several typical "real" dumb bells, finely striated and of a blackish brown colour.

The patient was advised to avoid pastry and sugary articles

of food, tea, coffee, fruits, and vegetables, especially rhubarb, of which he was very fond and had largely partaken lately. He was recommended to take for meat, either fish or fowl, to drink still lemonade or milk at meals, and lastly to drink three pints of distilled water daily, distributing the quantity between meals, at night, and early in the morning. He was prescribed an alkaline draught to be taken last thing at night and on rising in the morning.

Three days later the urine was still markedly acid, of a pale clear amber colour, contained no deposit, albumen, or sugar, but a haze of phosphates was thrown down on heating, s. g. 1012, urea 2·4 per cent. The discomfort had nearly gone, there had been no more hæmaturia, more urine was passed, and the patient felt better in every way. A week later the quantity of urine passed was nearly four pints in the 24 hours, oxalates and albumen were absent. Urea was estimated as 1·4 per cent. = 6 grs. per oz. = 462 grs. totally in three pints 17 oz. of urine. Occasionally slight lumbar discomfort was felt.

A short time after the last note was made, the patient declared that he was in his usual health; his tongue was clean, and he perspired much owing to the drinking of so large a quantity of liquid. He was ordered a tonic acid mixture, to be taken three hours after his two largest meals. About five weeks after the hæmaturia showed itself, the urine was in colour pale amber, much less acid than before, the urea was 2·1 per cent. = 9·2 grs. per oz., and microscopically there was only found in one of several specimens one colourless cluster of rod-shaped crystals, something like those of stellar phosphates. The patient was in his normal state of health.

REMARKS.

The clinical features above described are those of a case of Oxaluria Nervosa complicated with Hæmaturia. There has been at different times much discussion as to whether there is an oxalic acid diathesis, or whether oxaluria is one of often many symptoms in the course of other diseases. The latest

work, that of Dunlop, seems to shew that Oxaluria is merely an hyperacid dyspepsia, and that there is no formation of oxalic acid in the metabolic processes of the body, but that this substance is taken into the stomach integrally, or as the calcium and potassium salts with the food, and especially as a constituent of vegetables, fruits, tea, and coffee, is absorbed in that organ, such absorption being favoured by excess of hydrochloric or lactic acids therein, or retarded by the presence of lime, which, as a constant constituent of food and water, will tend to precipitate and so to hinder the absorption of oxalic acid. The administration of substances containing it, or of calcium oxalate itself, will increase the amount of the oxalate in the urine, and perhaps after saturation or the presence of excess of lime in the urine, the residual oxalate is thrown down.

Dunlop asserts that the only form in which oxalate of lime crystallizes is that of the octohedron, for the "real" dumb bell crystals usually described are, unlike the octohedra, soluble in acetic acid, and their solution is accompanied by effervescence, shewing that they are composed of carbonate of lime; and he thinks that these are formed during the decomposition of urine. This view receives some confirmation from the fact that in the case before recorded there were no "dumb bells" seen until the urine had been standing some time in Esbach's tube. I do not remember to have ever seen these forms in perfectly fresh specimens of urine containing the octohedra.

In a large number of the cases of Oxaluria the percentage of urea is excessive, as above seen, and often uric acid crystals or urates are present, though absent in the case recorded.

The rapid disappearance of the oxaluria under a diet chiefly composed of milk, fish, and fowl, together with an alkaline and diuretic treatment, is noteworthy, and, if Dunlop's view be correct, is due to the complete absence of oxalic acid from the food. He has shewn that on a purely milk diet there is a total disappearance of oxalic acid in the urine, though on an ordinary diet it is always present, varying in quantity between .01 and .025 gm.

The onset of the abnormal oxaluria was probably coincident with the advent of the aching lumbar pains in this case.

The hæmaturia apparently introduced a serious element in the course of the symptoms, but was accounted for, I think, by the fact that the patient had for some time been eating large quantities of rhubarb, a vegetable of which he was very fond. This, together with his general diet, which contained much oxalic acid, led to a great increase in the number of the sharp angular irritating crystals or small concretions of oxalate of lime passing over the delicate renal epithelium, and consequently there was hæmaturia complicating the previous dull aching pains.

Several cases were recorded in the *Lancet* a few years ago of hæmaturia and oxaluria following the ingestion of rhubarb. One case was that of a boy who had three attacks of hæmaturia, of which the first two were attributed to injury during exercise. In the third attack the urine was examined, and was found to contain calcium oxalate crystals. Each attack occurred when garden rhubarb was in season and had been freely partaken of. The father of the boy had himself, after similar indulgence, smarting pain in the urethra, frequent desire to micturate, and hæmaturia.

Dr. O'Neill, in the same journal, also mentions a small epidemic of urinary troubles which came under his notice, and in which all the patients had pains in the loins and malaise; most of them had frequency of micturition, and several had hæmaturia. It was found that nearly all these people had been eating often and largely of delicious rhubarb tarts and drinking much hard water during hot weather. Dr. O'Neill stated that if rhubarb be eaten when it is quite young, there will be no untoward after effects, probably owing to the small amount of oxalic acid present. Gooseberries, unripe acid apples, and asparagus if eaten in excess, are said to sometimes cause similar symptoms. Thus may probably some otherwise inexplicable kidney symptoms in spring and summer be explained.

TOXÆMIA FROM IMPURE WATER SUPPLY.

BY ERNEST BRICE, L.R.C.P.

SURGEON TO THE COPPICE COLLIERY COMPANY, CANNOCK CHASE.

DURING the early part of August the water supply to the Cannock Chase district became very unwholesome. Physically it had a putrid fishy smell, and deposited a thick sediment on standing. I was called to see the patient, A. K., a girl 17 years of age, on the afternoon of August 10th. She had suffered for some time from gastric disturbance without seeking medical advice, and had drunk large quantities of water for some days. Her friends explained that during the morning she had slept on the grass. I found her suffering from a prolonged rigor, with a temperature of 104° . Her heart was in a very excited condition.

At 8.30 p.m. there was no improvement in her general condition. The tonsils were swollen and covered with a greyish secretion, and she complained of much gastric soreness.

I saw her again on the following day at 11 a.m., and found that during the night she had suffered from extreme diarrhœa, which had, however, nearly ceased. The temperature was 103° , and there was a systolic murmur heard at the apex. Her tongue was brown and dry.

August 12th. The temperature was reduced to 101° , the systolic murmur still present, the right tonsil much swollen and covered with patchy secretion.

August 13th. Temperature, 99.5° , murmur not so marked. There was still considerable soreness over the gastric region. The diarrhœa had ceased, and the tongue was clearing. From this time she made a good recovery.

In regard to treatment, 3-gr. doses of quinine with 1 min. doses of the tincture of aconite were relied upon. The local throat condition was treated with a gargle of the chlorate of potassium and tincture of perchloride of iron.

All the symptoms enumerated point to a moderately severe toxæmic condition. The temperature, the tongue, throat condition, diarrhœa, and endocarditis, obviously due to the ingestion of large quantities of impure water containing micro-organisms the nature of which is unknown. No bacteriological examination was made of the throat secretion, but there was nothing in its appearance or in the general condition of the patient to suggest diphtheria, and the urine contained no albumen.

REVIEWS.

PRACTICAL POINTS IN NURSING.*

IN these days, when the question of the position and duties of private nurses is so frequently under discussion, and when so many of the nurses trained in our leading training schools are devoting themselves to private work, it becomes interesting to notice the publication of a handbook which has for its avowed aim the help and teaching of this particular branch of nursing. There can be very little doubt of the need of such a book, and it is disappointing to find that this one, in spite of its many good points, fails to supply this need.

In the preface we are told, that while "studiously refraining from advising the nurse to act on her own responsibility," the book is intended to teach her how to meet various emergencies. The latter part of this scheme is carried out well, and on the whole, thoroughly; while the former part, the line of demarcation between the nurse's province and the physician's, is not clearly drawn.

The duties and responsibilities of the nurse are exceedingly

* Practical Points in Nursing, for Nurses in Private Practice. By Emily M. Stoney, Graduate of the Training School for Nurses, Lawrence, Massachusetts; Superintendent of the Training School for Nurses, Carney Hospital, Sonlis, Boston, Massachusetts. Scientific Press Lim.

well described, although it is perhaps a little startling to find that, besides visiting her friends, and reading the best books, she is also required to visit the theatre twice a month. Of the first, the duties, there can be no doubt; the third may surely be left to the taste and discretion of the individual.

There seems also to be a little confusion between the nursing of the poor and the nursing of private cases. It is a truism to repeat that the poor require all the care and more than all the kindness given to the rich, but the necessities of each case are very different, and it is not easy in one book to include adequate instructions for the two.

The third chapter is generally full and clear, and gives instructions which must prove most valuable to many. Some of these indeed are given in a manner so detailed as to seem almost unnecessary for a woman who has presumably been trained and certificated. This, however, if it is a fault at all, is one on virtue's side, and the nurse who thoroughly knows and carries out the advice here given, with regard to the observation of, and reporting on, her cases, will be a great help to any doctor. It will be surprising to some to be told quite decidedly that Cheyne-Stokes respiration is a "fatal symptom." It is certainly a very serious one.

The Chapter on Accidents and Emergencies is well-written and useful. The instructions for bandaging are definite and clear and the illustrations exceptionally good. The fault of this chapter is that which permeates the whole book; too much is represented as being within the province of the nurse.

A full description of the administration of ether is given on page 152. This is surely outside the range of duty of any nurse. It is quite true that in an emergency she might be called on to administer an anæsthetic, but this would only be done under the direct supervision of the operating surgeon whose instructions, given at the time, she would be called on to follow, and who would himself be the responsible anæsthetist.

The directions for such ordinary emergencies as Hæmoptysis, Hæmatemesis, and accidents by burning, are not so full as they

might be ; neither are the methods of artificial respiration, and the fumigation of sick rooms fully gone into, while over and over again we are told that such drugs as morphia, ergot, strychnine, may be given by the nurse.

Minute instructions as to diet are given, and baths are freely suggested. These are surely matters which are entirely out of the nurse's hands, in which she has simply to obey orders.

On page 250, in treating of uræmic convulsions, we are told that "if the nurse is far from medical aid," the first thing is to put something between the teeth, and then to give a hot bath. We should have thought that in convulsions both these steps, certainly the former, might be taken at once, especially as two pages before the nurse is told that she may, in another case, on her own responsibility, give a hypodermic of morphia.

From the remarks regarding the last sacraments on page 261 we entirely dissent.

It seems ungracious to criticise a book with so many good points, and which, with a few alterations, might have been so helpful ; but at present nurses do not require to have their office magnified, and they should not be encouraged to think that they are at liberty to administer drugs, under any circumstances, unless they have express orders to do so from the physician in charge of the case.

The chapter on physiology is quite elementary, but is plainly and clearly expressed ; the glossary seems fairly complete, and the sick cookery has no feature of special novelty or interest.

This book will be useful in the hands of those nurses who have had enough of training and experience to give them a sufficiently deep sense of the responsibility attaching to their office, and to enable them to understand their own limitations. We are glad to know that there are still many such.

LECTURES ON THE TREATMENT OF FIBROID
TUMOURS OF THE UTERUS.*

WITH the possibilities revealed by the dawn of antiseptic surgery, during the past fifteen years the treatment of fibroid tumours of the uterus has received a large share of attention, and has reached probably as high a state of perfection as any other branch of surgery. The object of these lectures is to place in permanent shape the outcome of the author's own work, and to put in the hands of practitioners and students a mirror of the present status of the treatment of this disorder.

The lectures which make up the volume are ten in number, and deal in detail with anatomy, histology, varieties, etiology, degeneration, spontaneous disappearance, symptoms, diagnosis, and treatment. The subject of treatment necessarily occupies the greater part of the volume, and much care is given to such matters as general consideration, medical treatment, ergot, electricity, minor and major surgical operations. The lectures devoted to these latter subjects are particularly well done, one chapter being especially given to surgical environments, operating-room; sterilizers, sterilizing instruments, ligatures, and bands; catgut preparations; preparatory and after-treatment and drainage.

Most of these topics we think might better be dealt with in works on general surgery, and only tend to swell the bulk of volumes written on special surgical disorders.

A chapter is given to the author's own operation of vaginal ligation of the broad ligament and other minor matters.

Illustrative cases are quoted to show that Dr. Martin's pro-

* Lectures on the Treatment of Fibroid Tumours of the Uterus—Medical, Electrical, and Surgical. By Franklin H. Martin. M.D. Professor of Gynecology, Post-Graduate Medical School of Chicago; Surgeon to the Woman's Hospital, Chicago, etc. New York: The F. A. Davis Company. 1897.

posal has yielded good results in his hands in suitable cases, but the procedure has not caught on much in other hands.

Removal of the uterine appendages is fully dealt with, and the author's conclusions as to the value of the method are those now generally accepted in this country. The several varieties of vaginal hysterectomy are described at length, and a special lecture is devoted to the major operations of abdominal hysterectomy.

The volume, of less than two hundred pages, is well and pleasantly written, and is illustrated by many useful drawings. It is quite up to date, and will prove of value to anyone practically interested in the subject.

A HANDBOOK OF THE DISEASES OF THE EYE AND THEIR TREATMENT.*

THE issue of this, the sixth edition, so soon after the last edition, published in 1895, is itself ample evidence of the appreciation with which this work has been received, and we think rightly, by the profession.

While there are some few views with which we hardly agree, we have much pleasure in saying that it is one of the most accurate, reliable, and trustworthy works of its kind; and, for its size, is wonderfully rich in information, and shows throughout evidence of full knowledge of ophthalmic literature, carefully corrected by extensive practical experience. Not too full, for the most part, to make it an excellent work for the student and practitioner, it is in many parts a valuable work of reference to the physician and surgeon requiring information, especially chapter xi., on the "Motions of the Pupil in Health and

* A Handbook of the Diseases of the Eye and their Treatment. By H. R. Swanzy, F.R.C.S.I., etc. H. K. Lewis.

Disease"; chapter xvii., on "Ocular Diseases and Symptoms liable to accompany Focal Disease of the Brain"; and chapter xix., on "Diseases of the Orbit".

We are somewhat surprised, however, in connection with the diagnosis of the cause of exophthalmos, where tumour is suspected, to find no mention of the simple procedure of resecting the external rectus and examining the orbit by introduction of the finger with tenosis capsule, which gives at once reliable evidence of the existence or not of tumour in the orbit in those cases in which the growth is so deeply placed as to be incapable of detection by ordinary methods of examination. We have, however, nothing but praise for this work, which is quite one of the best of its kind and size in our language.

INFLUENZA, WITH SPECIAL REFERENCE TO SOME PECULIAR SYMPTOMS.*

THIS book is essentially the Thesis written by Dr. Gray for his M.D. degree, and contains a full account of the interesting disease of which we have so recently had ample experience. We cannot say that the symptoms described are any of them entirely new to us, though Dr. Gray believes that some have not been hitherto described; but we can recommend the book as containing one of the best clinical accounts of the ordinary symptoms of influenza which we have seen, whilst most of the rarer symptoms have evidently been carefully studied and are well described. The descriptions are illustrated by several cases, if anything related rather too much in detail. A few

* Influenza, with special reference to some peculiar symptoms. By William Gray, M.D. (Honours), C.M. (Edin.) London: H. K. Lewis, 1897.

pages are devoted to the subject of treatment, but there is nothing in this part of the book which calls for special notice. Dr. Gray holds that the most useful drugs are acetate of potash and phenacetine, but has no belief in the power of either to do more than relieve some of the more distressing symptoms of the disease.

THE POCKET THERAPIST.*

THIS small book contains in very concise form hints for the treatment of disease, surgical as well as medical. There is of course but little room for discussion of the various methods of treatment suggested, and indeed the author only pretends to mention those which he has himself found of service; nevertheless in most cases several alternative courses are described, and indeed the variety of methods is a striking feature of the book. We gather that the author is a good believer in drugs, and indeed he does not err on the side of simplicity in prescribing if we are to judge by some of the prescriptions given in full. Thus, we note one for the treatment of asthma, which contains no less than fourteen separate constituents, while eight or nine is by no means an uncommon number. We doubt whether this tendency is altogether a good one for imitation; but probably the difficulty of remembering such formidable lists will prevent others from following too closely in the author's steps in this direction. The book is a really useful one.

* *The Pocket Therapist*, a Concise Manual of Modern Treatment, for Students and Junior Practitioners. By Thomas Stretch Dowse, M.D., F.R.C.P.E., late Physician Superintendent Central London Sick Asylum; formerly Physician to the North London Hospital for Consumption and Diseases of the Chest, etc. Bristol: John Wright and Co. London: Simpkin, Marshall, Hamilton, Kent and Co. Ltd. 1897.

New Books, etc., Received.

- The Practitioner**, a Journal of Practical Medicine and Surgery. Edited by MALCOLM MORRIS. Old Series, Vol. lviii., New Series, Vol. v. January to June. 1897. London, Paris, and Melbourne: Cassell and Company Limited.
- The Cure of Tuberculosis by Oxy-tuberculine**, with Experiments on Patients, Animals, and Cultures. By J. O. HIRSCHFELDER, M.D., Professor of Clinical Medicine, Cooper Medical College, San Francisco, Cal.
- Westminster Hospital Medical School.
- Ueber die Verwendbarkeit des Gottlieb'schen Tannalbin als Darmadstringens in der Kinderpraxis.** Von M. Dr. JOHANN CZEMETSCHKA.
- The Appendix "in the Interval;" a New Method of Studying its Pathology.** By ROBERT ABBE, M.D., Attending Surgeon to St. Luke's Hospital, the New York Cancer Hospital, etc. New York: The Publishers' Printing Company. 1897.
- The Eye as an Aid in General Diagnosis. A Handbook for the Use of Students and General Practitioners.** By E. H. LINNELL, M.D. Philadelphia: The Edwards and Docker Co. 1897.
- Elements of the Comparative Anatomy of Vertebrates**, adapted from the German of Dr. ROBERT WIEDERSHEIM, Professor of Anatomy in the University of Freiburg in Baden, by WM PARKER, Ph.D., Professor of Biology at the University College of South Wales. Second Edition. Illustrated. London: Macmillan and Co. Limited. 1897.
- Our Baby, for Mothers and Nurses** By Mrs. LANGTON HEWER, Diplômée Obstetrical Society of London, etc. Fifth Edition, Revised. Bristol: John Wright and Co.

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THE
BIRMINGHAM MEDICAL REVIEW.

OCTOBER, 1897.

ORIGINAL COMMUNICATIONS.

ETHICS AND INDIVIDUALISM IN MEDICINE.*

BY SIR JAMES CRICHTON-BROWNE, M.D. EDIN., LL.D., F.R.S.,
LORD CHANCELLOR'S VISITOR IN LUNACY.

GENTLEMEN—This is a day of salutations. We are met here, as are many other groups of men with pursuits or interests like our own, in London and the provinces, to greet a new medical year, to welcome those who have come to join our ranks and to exchange words of encouragement with one another. On such a ceremonial occasion it would not be appropriate, I think, for him who is made the mouthpiece of the hour to indulge in any disquisition on the special professional topics that engage his attention, and with which he is no doubt most competent to deal; and least of all would such a course be justifiable when, as happens this evening, the speaker is interested in a very special speciality, recondite in its subject, complicated in its relations, and highly technical in its terms. I shall not, therefore, take advantage of the opportunity to inflict upon you a discourse on mental perturbations, or on the molecular commotions of the brain; nor shall I attempt to elucidate any point in nervous mechanism. I shall merely submit to you a few general observations suggested by my visit to Birmingham, and by the circumstances

* Inaugural Address delivered at the opening of the Winter Session of Mason College on October 1st, 1897.

of this vigorous and flourishing medical school, a new session of which opens to-day.

And in the first place, as a disinterested observer having some knowledge of many medical schools, and not being personally connected with any one, I would congratulate you who are beginning or continuing your studies here, on the very favourable conditions under which these studies will be carried on. The history of your school is an instructive illustration of the rapid evolution of a useful and necessary institution. The germ of it, as your Calendar says, was planted just seventy-two years ago in a private house, where some classes were conducted by Mr. Sands Cox, but in three years that germ had sprouted into a medical school; in twenty-eight years it had grown so luxuriantly as to be deemed worthy of being fenced about by Royal Charter; and in sixty-seven years—that is to say in 1892—having meanwhile branched out in various directions, it blossomed into its present comeliness as the Queen's Faculty of Medicine of Mason College. In little more than the allotted term of a man's life, an insignificant private enterprise has developed into a great and prosperous public seminary for medical education, fully organised and thoroughly well equipped in every department. So complete is your school, so adequate is the education it offers, that its students are entitled to ask that facilities should be given to them for the acquirement of degrees, and success must therefore be wished to the project which is now on foot to obtain the authorisation of a Midland University.

The advantages which your school derives from its union with Mason College are so patent and well known to you, that I need not even name them; and the advantages which Mason College derives from its union with your school will, I am sure, be generously acknowledged by the representatives of its other faculties. At this very moment every medical student I am addressing must, I believe, experience a stimulus as well as a sense of pride in the knowledge that an alumnus of this college has attained to the distinguished position of Senior Wrangler at Cambridge; while the students in the faculties of Arts and

Science cannot, I am sure, but regard with some sympathetic interest the admirable work in myology and teratology that is being done in the anatomical department by Professor Windle, your accomplished and energetic Dean ; the valuable researches into the functions of the suprarenal bodies that have been undertaken by Dr. Vincent, the original pathological observations that we owe to Professors Saundby and Barling, the ophthalmic studies of Mr. Priestley Smith, and the surgical achievements of Mr. Jordan Lloyd. It would be trite to discuss the actions and reactions of Mason College and the Queen's Faculty of Medicine upon each other, but I may perhaps be permitted to say a word as to the influence which seems to have been exerted on both by their surroundings. Institutions, colleges, schools, societies have their distinctive characters, just as have individual men and women ; and the distinctive character of Mason College and the Queen's Faculty of Medicine is, I should say, practical and utilitarian. The active, searching, contriving, empirical spirit of Birmingham has called both of them into being to meet pressing public wants, and has impressed its stamp upon them. The founder of Mason College was undoubtedly moved to establish it by recollections of the difficulties he himself experienced in preparing for an industrial career, and by a desire to promote the manufactures of the town and district ; and the original deed provided for scientific instruction only, with the addition of modern languages, which, of course, have a commercial value. The founders of the medical school, on the other hand, aimed at the education not of professors or devotees of science, but of expert surgeons and medical men, qualified to practise their art. Both the college and the school have in recent years greatly enlarged the scope of their teaching, letters on the one hand, and science on the other now taking a much more prominent place than they once did ; but both are still dominated by a regard for the immediate economical requirements of the place and period.

The practical and utilitarian intent which I have ascribed to this college and school, will no doubt be regarded by some as

an opprobrium. We have it often dinned into us that it is knowledge for "its own sake" which we should pursue, without any concern as to its applications ; but while not disputing this authoritative dictum I would suggest that there is room for all kinds of knowledge in this world, and that while knowledge for its own sake is good and may unquestionably lead to unforeseen results of the utmost value, knowledge for bread and butter's sake is not bad, and must always have a primary claim on beings who have the pangs of hunger to appease. Pure science, erudite learning and proud philosophy find, perhaps, their fittest home in colleges and schools to some extent sequestered and remote from the busy haunts of men, while technics and science bearing on industry and the business of life, will be most suitably located in great centres of population like Birmingham. Carlyle called Naseby field the navel of England, and Birmingham might perhaps be described as the medulla oblongata of the industrial world, made up as it is of a collocation of centres that are essential to the maintenance of crafts and manufactures in all quarters of the globe. Without the weapons, the implements, the machines, the fabrics that it pours forth, human activities would be paralysed in many regions, and any interruption of its functions would certainly have an asphyxiating effect upon the whole of this country. The atmosphere of Birmingham is keenly practical, and it is but natural that the institutions of Birmingham should have a practical complexion.

As regards the medical school here, the practical turn given to its teaching in harmony with the *genius loci* is worthy of all commendation. Its main purpose is not to fit out original investigators, but to arm and discipline those who are to contend with the forces of disease ; and in order to do that it has, as science progresses, to insist more and more on laboratory, dissecting-room, and clinical work. It is steadily increasing its laboratory accommodation, and you do not require to be urged to avail yourselves of the opportunities thus opened out to you. Nay, it occurs to me that a word of warning of an opposite kind may be useful, and that you should be recommended, in your

addiction to laboratory work, not to under-estimate the utility of the systematic teachings of your professors.

Lectures do not certainly play the prominent part in medical education that they did in my student days. In the University of Edinburgh thirty years ago we had to listen to lectures five hours a day five days a week. But while admitting that lectures were formerly overdone, while practical, experimental, and tutorial work was neglected, I cannot agree with those who would discard them altogether from our curriculum, as mere slipshod versions of what is to be found in textbooks, or who depreciate their teaching power. The spoken word has a vitalising influence that is all its own, and oral instruction has physiological claims to the academic precedence which has been at all times accorded to it.

In this bookish age a very large proportion of our acquired knowledge comes to us through the eye; whereas in by-gone centuries the ear was the main, nay, the almost exclusive, channel for the importation of learning; and there can be no question that the invention of printing has to some extent modified the structure of the brain by diminishing the functional demands on its auditory paths and rendezvous. The increased use of one sensory centre and the diminished use of another in connection with cerebral activities of wide range and potency must, during the development of the cortex and brain generally, have led to changes and deviations in the associative paths and internal convolutions linking and lying between the sensory and the motor centres. And thus, traffic of a certain class having been diverted from the ear to the eye, there must have been a broadening and multiplication of the high roads and by-ways leading from the visual centre, in the occipital lobe, to the central or distributive and the efferent or expressive centres, and a corresponding narrowing or abandonment of the routes connecting the aural centre, in the temporo-sphenoidal convolution, with them. Vision has become more and more the dominant sense in education. But, although vision is the dominant sense, we must not rely upon it too exclusively, for

even our simplest ideas are built up by contributions from all the senses, and those mental stores are most useful and available that can be approached by several different alleys. Entire dependence on a single avenue of sense may give precise reactions graded in accordance with the intensity of one kind of stimulus, but the full and free growth of intelligence requires the well-balanced activity of all the organs of sense by which materials for distinction and comparison are supplied. All the secondary sensations that fringe our mental images enhance their working value and enable us to lay hold of them more readily, and the most perfect response is obtained from those cerebral centres that are invaded by sensory impulses of several different sorts. Clearness of conception, quickness of apprehension, breadth of thought belong to the brain that has been thoroughly opened up, both in its auditory and visual tracts and their connections, and hence the high significance of ear-teaching in education. There is sagacity in the Prayer Book exhortation to god-parents that they are to call upon those for whom they are sureties "to hear sermons," and I am inclined to believe that the dialectic and polemical ability of my countrymen in Scotland is to be attributed in some measure to the voluminous pulpit utterances to which they had to listen in their boyhood.

I am not suggesting, however, gentlemen, that there will be anything of the nature of the sermon in the lectures that you will have to listen to in this college, and that will, as auditory impulses, after passing through mazes of nerve fibres and throngs of cells, enter and illuminate your consciousness. Sound these lectures will be, I have no doubt; cogent in argument, elevating in tone, but they will not be homiletical in character but will necessarily deal with those direct observations and material problems and experiments that form the foundations of medical science, and that have taken the place of the dogmas and speculations upon which it once mainly rested. All recent progress in medicine has depended on research and discovery carried on by physical and chemical methods. The

mechanical principles that were first applied in anatomy, the mother science of medicine, to the explanation of the construction and movement of bones and muscles, have been carried by the physiologist into every organ of the body, and into the arcana of the tissues, and have been shown to be essential to the understanding of the changes that take place in them during the performance of their functions. And at the same time the aid of chemistry and electricity has been invoked to drive back, step by step, and, if possible, to banish altogether that vitalism which was at one time all but supreme in the domain of animal physiology. And now, not content with his corporeal conquests, the physiologist is pushing his mechanical methods into the realm of psychology, and is seeking by means of them to investigate the data of consciousness. Having by electrical stimulation and other experimental procedures localised sensory and motor centres in the brain, having shown that there is a definite order of development in the nerve tracts, and having disentangled to a large extent the paths of nervous impulses of various kinds, their halting points and goals in nerve cells, he is now eager to catch ideas on the wing, and to examine them in the usual manner.

Helmholtz, in his great works on vision and hearing, was the first to show how physics mount into physiology and psychology; and after him Weber, Fechner, Lotze, and Wundt have step by step pushed forward the parallels of the material accompaniments of thoughts and feelings. And quite recently a movement has sprung up in Germany to advance still further mechanical explanation of the facts of mental life, and to bring psychology, which has always been scientific in as far as it has observed and classified and analysed phenomena, into line with the exact sciences of external nature. Experimental psychology has been inaugurated, and research laboratories, in which the physical changes that are associated with mental processes are to be measured and tested, have been established. Originating in Leipzig, experimental psychology has taken root in several other centres on the Continent, has spread to America,

where it has been eagerly adopted, and has at last made its way into England. The University of Cambridge has voted a sum of money to be devoted to investigations in connection with it, and a few months ago a meeting was held in London to promote the establishment of a laboratory for its study in University College. The names of those who attended that meeting are a sufficient guarantee that the project which it approved will be successfully carried out. I have little doubt that suitable arrangements will be made for instruction in the new methods of psycho-physical research in University College, and that in course of time other schools and colleges, Mason College amongst them, will follow its example and afford facilities for studies in anthropometric psychology. I have little doubt, too, that such studies will be fruitful of useful results, by widening the scientific basis of psychology and supplying us with standards by which to gauge the speed and duration of certain neural operations, the variations in these in different individuals, and the depth of certain mental defects. But at the same time I am disposed to think that exaggerated notions are entertained as to what experimental psychology can actually accomplish. Its field is after all a narrow one. It can never supplant self-observation and introspection as means of mental analysis, and must indeed always to a large extent lean on these. It is practically restricted to the measurement of sensations and movements and the gaps between them, or the simplest mental processes; and hitherto it has, it must be admitted, been somewhat ambiguous and indefinite in its declarations. For my own part, I look with more sanguine expectations of light on the obscure problems of mind to comparative, ethnical, developmental, and pathological psychology, which may all of course be investigated by experimental methods, than to the new experimental psychology strictly so called.

We all gratefully acknowledge the immense debt we owe to experimental physiology with its exact mechanical methods. It has dispelled myths and errors, supplied us with a body of precise and well organised knowledge, and revolutionised our

treatment of disease, and it promises in the future not only to augment our healing power, but to afford trustworthy guidance in education, and in the regulation of many social relations. As it stands to-day, physiology, it seems to me, offers a liberal culture to all who study it. An independent science itself, but in touch with all other sciences, it brings into exercise observation, judgment, memory, while it passes in review questions of surpassing interest to every human being, and thus confers an admirable intellectual discipline, while storing the mind with information that must prove useful in the conduct of life. I would be disposed to say that physiology might henceforth with excellent results enter much more largely than it has hitherto done into a general liberal education, that is to say, into the education of those who do not intend to follow medicine as a profession; and I would even suggest that the young men of Birmingham who are destined to carry on its staple trades might be worse employed than in attending a course of physiology in this College. I read the other day that the late Sir Isaac Holden attributed his invention of the square-motion wool combing machine which made his fortune and brought about a complete transformation in our woollen industries, to the fact that he tried to imitate as closely as possible the movements of the hand of the hand-comber. On this physiological basis he laboured consistently, and on it he achieved success where many others had failed. And the human body, you may depend upon it, is a rich storehouse of practical hints of this kind—a storehouse of which physiology holds the key. It is an epitome of mechanics, and in its exquisite machinery the engineer, the artificer, and the inventor may still find, perchance, some vein of new inspiration. But apart from any such possible treasure trove, the study of physiology is well deserving of the attention of those who are to engage in arts and manufactures like those of Birmingham, for they will derive from it habits of thought, special insight, broad views and sympathies which cannot fail to be useful to them as producers themselves, or the superintendents of those who produce.

But whatever outsiders may think of it, there does not seem much danger that the study of physiology will be too lightly regarded by the medical student in these days. Its definiteness and lucidity appeal with special force to him, and its mechanical methods take possession of his mind at a very plastic age ; and, indeed, the risk would seem to be that physiology in conjunction with anatomy and pathology may materialise his conceptions, bind him down to a purely mechanical interpretation of the universe, and so cause him to lose sight of truths which are not less valuable than physiological principles to the medical man. It is expedient that from time to time the medical student should be induced to raise his eyes from the test-tube, the microscope, or the galvanometer, and to fix them on a wider horizon ; and mindful of this expediency, I would ask you to allow me in what I have further to say this evening to point out to you that man after all stands above physiology, and that there is that in his nature which mechanical methods can never enable us to reach or appraise. The revelations of comparative anatomy and the brilliant discoveries that we owe to experiments on animals have assuredly inclined us to take an animal view of human nature. Every tissue that enters into the composition of man's body has its analogue in the bodies of creatures far beneath him in the scale of being. Every organ with which he is endowed is seen in greater or less elaboration and completeness in the beasts that perish. Every function he exhibits is displayed in a rudimentary or fully evolved state by inferior organisms. And yet, notwithstanding all homologies and resemblances, there is a great gulf fixed between human and animal nature. Man, the breviary of all hygone evolution, stands pre-eminent in form, structure, intelligence, and above all in the possession of a moral sense.

In his power of assuming the erect attitude, and of extending and flexing the hip and knee-joint when standing, in the development of his hands for the purpose of prehension, in the freedom of movement of his upper limbs, in the perfect poise of his head on the summit of the spinal column, in the high degree of sen-

tiency conferred on him by his exposed integument, in the modelling and mobility of his face as an instrument of expression, man presents characteristics that are entirely his own. And in a still higher degree is he differentiated from any animal by the mass and structure of his brain, which, although exceeded in absolute weight by the comparatively simple brains of the elephant and whale, whose huge body mass demands large sensory and motor centres, is, in his civilised state, more than three times the weight of brain of the highest anthropoid ape, the animal that most closely approximates to him, from which again it is even more widely separated by the proportional development of its parts, by the complexity of its cortical structure, and by its richness in association centres.

But it is by what are incorrectly spoken of as the functions of the brain, by his mental faculties, his reason and intelligence that man is distinguished from animals, far more than by visible cerebral differences. I say these are incorrectly spoken of as the functions of the brain, for they certainly cannot hold the same relation to that organ that movement does to the muscles, or bile to the liver. The brain is a sensori-motor machine, concerned with the storage and liberation of energy, and it is contrary to the principle of the conservation of energy that will or emotion or ideas, which are immaterial agencies, should interfere with movements in nervous arrangements and disturb the balance between work done and the diminution of the intrinsic energy of the body and its contents. Nothing can be derived from motion but another motion, nothing from mental process but another mental process; and thus the facts of consciousness can never be explained by molecular changes in the brain, and all that we can do is to fall back on an hypothesis of psycho-physical parallelism, which assumes concomitant variations in brain and mind. There is a physical universe of which only a fragment is known to us. There is a psychical universe in a corner of which we live and move and have our being. We may picture these to ourselves as circles which impinge on each other at the first moment of

conscious existence, which intersect more and more as life goes on, their largest intersection (including but a small segment of each) being reached when life is at its full, which then withdraw from each other as old age sets in and part company at death. But whatever image we may adopt we must hold fast to the truth that mind and matter are distinct essences, irreconcilable in their nature, though mysteriously accordant in their operations; that only in the elementary processes of mind made up of sensory and motor elements has correspondence with physical changes in the brain been traced out, and that we are still without any cerebral explanation of those higher powers of mind which exalt man above the animal creation.

Without attempting even to sketch the intellectual and emotional characteristics which place human nature on a pedestal above all other nature, I would direct your attention specially to that moral sense to which I have already referred as a peculiarly human attribute, and which, as Huxley has insisted, is not derived from the struggle for existence, but implies a reversal of the action that avails in that struggle. In his capacity as an animal man has achieved his success in the world by his superiority in certain qualities which he shares with the tiger and the ape; by his cunning, his power of imitation, his greed, his rapacity, cruelty, and self-assertion; but in his capacity as a social being he has advanced from savagery to civilisation by the suppression of these qualities and the substitution for them of others of a very different kind, qualities such as sympathy, self-restraint, justice, and benevolence, of which we have no hint at in any level lower than his own. In his advance into manhood he has created for himself an artificial, a social, an ethical atmosphere which he alone of living beings breathes. In his progress in civilised polity he has prepared for his species an ethical environment which powerfully modifies its characteristics and tendencies, and is in turn modified by it. In that environment what we call goodness or virtue is the potent force, and the survival of the fittest becomes the survival of the best, the survival, that is to say, of those best adapted not to

material but to moral conditions of existence. A new standard has been set up. Better and worse mean no longer more or less adaptation to geographical surroundings for the time being, but more or less conformity to laws, rules, precepts, and sentiments of artificial origin but of everlasting obligation.

Now, if we allow that certain rudimentary virtues, such as moderation in the indulgence of appetite, and industry, may be of advantage to the individual and the race in the competition for life, it must still be maintained that morality proper only emerges when altruism, sympathy, or a desire for the happiness of others appears on the scene, and that in morality proper an entirely new principle is involved. Even if we allow that the moral sentiments, like other natural phenomena, have been reached by a process of evolution, we must still bear in mind that the immoral sentiments must have had the same origin, and that our preference for the one over the other can be found only in human intuition and experience. Moral sanction has not grown out of environment, or outer relations, or circumstances, but out of an element in human nature; the accumulated influences of individual men and the initiative of certain great men who have from time to time emerged from the mass of mankind and become active agents in differentiating the ethical environment around them and in all time coming. Everywhere in human history we discern not only the slow accretion of morality by the impalpable additions made to it by submerged millions, but its sudden upheaval from time to time by the workings of the spontaneous impulses of great men whose names stand for ever prominent.

This immensely energetic quality, greatness, genius, or heroism, to which so important a part is assigned, is a departure from common form, and we must carefully distinguish between the causes which produce it and the causes which tend to preserve it. It is not an adaptive modification. It may be fostered, pinched, or blighted by environment; it is not produced by it. Its origin is to be sought in those internal molecular changes

which give rise to variations. It is a divergence from the parent type due to influences operating upon the ovum and the embryo, and is independent of external conditions, physical or social. Neither in descent nor in personal vicissitudes is any adequate explanation of it to be discovered. The motherly theory of greatness, which only removes the difficulty one generation, does not bear examination in detail, for it can be shown that some great men had inferior mothers, and that those of them who had superior mothers differed from them just in those properties that made up their greatness; and the climatic theory is equally untenable, for greatness has not been tied down to any special meteorological conditions, but has appeared in all parts of the planet suitable for the habitation of the best human breeds. It is a sport, a new departure, what we call a spontaneous, because an inexplicable variation, inexplicable at least by the biological causes which lie nearest at hand and which we commonly invoke. In every series of living beings that we contemplate we are accustomed to look for the transition from term to term, by minute and insensible differences or continuous variation; but we must not shut our eyes to the truth that in such series there are to be noted breaks or gaps, filled by no transitional forms, but leapt, as it were, by discontinuous variation. Breaches of continuity undoubtedly occur in the evolution of living beings and of particular organs and instincts, and the recognition of such breaches and abrupt or transilient variations, as Mr. Galton has called them, removes a stumbling block in the way of the acceptance of the evolutionary theory. There are in the animal kingdom mechanisms and devices useful to their possessors in a state of perfection which, while only partially developed, must have been not only useless, but disadvantageous encumbrances. Now it is clear that with reference to such structures natural selection could have afforded no protection during their imperfect and preparatory stages while they were advancing by minimal steps, and that we can only account for them by supposing that they appeared at once, fully formed by a volt of discontinuous variation. Environment is continuous

and varies merely in degree, but species and organs are discontinuous, and differ in kind, and it is difficult to understand how the former can be the cause of the latter. In studying discontinuity, realising that the missing links are more numerous than the existing ones, we begin to suspect that the chain of being may resolve itself into a series of rings disconnected, but still somehow related, as evidenced by their form, size, proportion, substance, and arrangement.

In plant life we have many illustrations of variation due to environment which disappear when the environment is changed, as, for instance, in the alterations which present themselves in marsh plants grown on dry land, and in lowland plants grown on chalk downs or mountains, and of spontaneous variations due to a deeper cause and unaffected by changes in environment, as, for instance, in the copper beech, an unaccountable sport from a green beech in a German forest, which retains its coppery hue in the most widely different soils and climates, and the weeping habit in the elm and ash, a novel trait without environmental justification which is perpetuated under diverse circumstances. What in environment or in immediate ancestral conditions have we to thank for the double rose or William pear or Japanese chrysanthemum? It is all very well, hypothetically, to ascribe such variations to over-nutrition or under-nutrition, or to say that variations group themselves in the probability curve, but the facts remain that certain individuals have stepped out of the parental type, while innumerable other individuals presumably also over or under-nourished have proved true to it; that variable plants never cease to vary; that similar variations occur under dissimilar conditions; and that dissimilar variations arise under conditions nearly uniform.

In the animal kingdom variations of all kinds are abundant and multiform, some of them obviously due to surrounding conditions, and some, as far as can be ascertained, not so; some built up by gradual, almost impalpable, increments, and some presenting all at once a large degree of originality. Our canine friends are a highly varied group, probably descended from

several wild species, and amongst them we observe slight modifications due to habitat and artificial selection of variations which can be traced up in diminishing proportion through a line of ancestry. With such variations we are familiar, but the sudden appearance of an albino in a dark-haired family is a somewhat startling phenomenon, which apprises us, as Huxley said, that "Nature is often brusque, and makes leaps and bounds." Of this sort of advance examples are afforded by the hairy moorhen, in which the feathers are, for no obvious reason, destitute of barbules ; by the angoras amongst domestic animals—the goat, the cat, and the rabbit—in which the hair is long and silky ; and by the "rhinoceros mice" found at Taplow, which were entirely naked and without hair, except a few dark-coloured whiskers. These variations were certainly not due to selection or environment any more than are those which we see daily in the human families of our acquaintance, in which a number of children born of the same parents and reared in practically identical conditions differ from each other in a remarkable manner in size, build, colour, and mental capacity, in which, perhaps, an idiot and a monster (and we must remember that, as St. Hilaire taught, there is order in abnormality) are growing up side by side with a genius and a beauty.

As regards vegetable and animal variations alike—and among the latter I would include the great man—there are, it must be admitted, a large number for which no exciting cause can be discovered, and which must therefore be classified, provisionally at any rate, as spontaneous, or accidental. Discontinuity in variation, of which species may be a standing monument, is not certainly in the environment ; so we are bound to look for it in the living thing. And in this connection it is well to remember Darwin's remark, that as regards variation the nature of the organism is far more important than the nature of the conditions. Those variations referable to the living being Darwin in the first instance ascribed to chance—an incorrect statement, as he allowed, merely intended to cover ignorance ; and to-day we are

still obliged to speak of them as fortuitous. Taking the universe in its entirety, regarding all as "parts of one stupendous whole," such variations are included in the unity of the cosmos. But the cosmos is a wide word, and there is no inconsistency in holding that variations, although summed up in the nature of things, are not interpreted in the organic nature by which they are immediately surrounded. No doubt in a strict sense the great man is the product of his antecedents, but these antecedents in the absence of the great man himself could not have afforded any clue to his personality. Causes become apparent in their effects; and the great man being not a simple mechanical phenomenon but a complicated problem of conscious life, is not to be explained by a reference to elements of a different order containing no trace of his characteristics. The combination of these elements in such a manner as to produce this particular result has to be explained, and that can only be done by taking into account the result itself. All ultimate explanation must look to the end and read back the nature of the particular result into the remotest antecedent. It must concern itself with the whole evolution, and rest on proof that there is an organic unity binding the whole process into one and making it intelligible; that there is evolution and not merely gratuitous metamorphosis. But of remote causes of this description, science, in its still purblind state, does not take cognisance, and we need not, therefore, be surprised to find the most recent authority in this department, Mr. Bateson, whose compendious researches are a rich dower to science, dismissing the subject in these words; "Inquiry into the causes of variation is as yet, in my judgment, premature."

It is clear that variations, the causes of which are as yet inscrutable and beyond investigation, may still be conveniently spoken of as spontaneous—and the bulk of variations fall under this description—while as regards these variations which, it is alleged, can be traced to diversified external conditions, to food supply, climate, use and disuse, pressure, etc., there still remains to be taken into account, when allowance has been

made for all these, the power to vary and to vary in such a manner that the symmetry and general balance of the organism is maintained. We are obliged to fall back upon a law of reproduction, involving not only resemblance to parents, but individual difference from them ; upon covert causes infinitely remote, setting up a tendency to vary as well as to repeat ; upon a duplicity of the original vital impulse, whensoever derived, operating upon the totality of living beings from the commencement. And if we accept this view and regard spontaneous variation as one of the fountains from which have sprung those beneficial differences which natural selection has adopted and accumulated, and if we connect it with established facts as to the order in which animal forms, and more especially vertebrates, have appeared in the long history of the fossiliferous crust of the globe, in definite sequence, beginning with the lowest and culminating in man, we come to see something of an increasing purpose running through the ages. We may come even to acknowledge that evolution is a continuous revelation, and variation a perpetual miracle. "The flowers," said Carlyle, "are eyes looking out upon us from an inner sea of beauty." May not the great man be a flash of illumination from an unsearchable firmament of wisdom ?

But whatever his origin, the great man is an indisputable fact recurring with greater or less frequency. A wonderful complex of higher faculties not attributable to inheritance from either parent, or from any more remote ancestor, or to the play of investing forces, he comes with peculiarities which distinguish him from the average man and enable him to remodel the average man more or less extensively and powerfully. Selected by his environment and moulded and biassed by it in some degree he does not owe to it his essential qualities.

How little the genesis of the great man depends on his personal environment may almost, I think, be inferred from the histology of the brain. At the sixth month of foetal life the cortical substance of the cerebrum contains neuroblasts equal in number to the cells present in it in its most mature state, that

number being computed at 1,200 millions. True, an enormous elaboration of structure subsequently takes place. The neuro-blasts grow in size and change in shape, become nucleated and nucleolated nerve cells in which pigment is deposited. The cytoplasm of these nerve cells changes in chemical constitution as shown by its reactions to staining agents. The cells undergo polarisation, and the neurons and then the dendrons are sent out. The medullation of different nerve fibres at different rates takes place, and there is a multiplication of tangential nerve fibres. The brain goes on expanding and becomes more complicated up till adult life; but whenever the number of its cells is determined, its groundwork may be said to have been laid down and its ultimate plan to have been outlined. Now genius or greatness is unquestionably involved in the ground plan and elevation of the brain, and when it appears, therefore, it must have been potentially present at the sixth month of its existence when the muster of neuroblasts is complete. But up till the sixth month of existence, the environment is uterine and of a singularly uniform description, scarcely affording conditions equal to the differentiation of the genius from the average man.

In primitive times a great man, born into any tribe or clan must have been to it just what a new and advantageous structural variation is to an animal. His greatness, courage, ingenuity, insight and energy must have helped it in its tribal conflicts and conduced to its survival. And although the greatness of the great man could not be perpetuated as advantageous structural modifications are, yet might it be very far reaching and, indeed, permanent in its effects. The example of the great man would be imitated by members of the tribe who were not great, a process which we see in operation to some extent amongst animals of gregarious habits, and his greatness would live in the traditions of the tribe and in a manner exclusively human, influence the conduct of unborn generations and thus determine at many critical epochs their tribal development. And in times not primitive the in-

fluence of the great man becomes more and more apparent. History is indeed a record of its interactions with the existing temperament prejudices and ideals of a people in certain physical conditions. In every individual life there are decisive moments when a choice has to be exercised that determines the whole future course of its current, and in every nation's life there have arisen decisive men, who, by precipitating war or revolution or reform; or by their inventions, discoveries, or ideas, have irrevocably changed its career, have become factors in its environment and deflected its advance. Would the United States of America have been what they are to-day had George Washington never lived? Would Europe be mapped out exactly as it is had Napoleon never aspired? Does not Italy owe its unity to Cavour and Garibaldi, Germany its empire to Bismarck and Moltke? Can we believe that our insular position would have given us the sea power we possess, had men like Drake, Hawkins, Frobisher, Blake, and Nelson never grown up on our shores? Have not men like Frederick the Great and Cromwell determined great changes in national life? Have we not seen nations stagnating for want of great men, and bursting into vigorous efflorescence when a group of them appeared? Is it possible to believe that the differences between one nation and another, whether in intellect, commerce, art or morals, depend simply and solely upon physical circumstances or geographical position? Can we credit it that, had the original stock of our English people been planted in the malarious forests of Benin, their descendants would have been to-day black, bloodthirsty, and treacherous savages, rejoicing in Ju-Ju, and that the late subjects of King Drunami, had their progenitors been located here, would have been now a wealthy, humane, and prosperous white people? Surely we must keep in mind the vastly preponderating influence of racial constitution and the manner in which this is differentiated from within as well as from without. We see nations stimulated and biassed in every direction by their own offspring, and bearing indelible traces of the great men who have sprung up within their borders, and who

have often exerted an influence far beyond natural barriers. There is no Englishman to-day who does not in his thoughts or conversation bear the impress of him who sleeps at Stratford-on-Avon, who came like a meteor but has stayed like a sun, the only genius who ever made universality a success. Scotland still stiffens with the fierce rigidity of Knox, and melts into tenderness at the songs of Burns. To say nothing of the founders of religion, men like Luther and Loyola have swayed mankind under the most diverse geographical conditions. Mr. Herbert Spencer is himself a conspicuous refutation of his own theory, for the influence of his truly original intellect, the making of which is not to be recognised either in the long story of the race, or in the social state into which he was born, has proved a leaven in science, has permeated into the general thought of the time, and permanently affected social relations. So, too, Darwin has brought about an unexpected and radical change in intellectual government, and created a critical epoch in science, a period of rapid evolution after an interval of quiescence. Hours might be spent in enumerating and defining the specific influences that great men have exerted on national evolution—men like Julius Cæsar and Marcus Aurelius, Raphael and Michael Angelo, Charlemagne and Hildebrand, Milton and Goethe, Voltaire and Rousseau, Gibbon and Hume, Bacon and Newton, Comte and Mill, Davy and Faraday, Ruskin and Carlyle, Watt and Stephenson. I shall content myself with one illustration near home, and I am sure I shall not transgress the rule laid down by the Founder of this College and worthy of all acceptance, that politics are not to be referred to in its precincts, if I say that we could all name a great man, a living statesman, an unmistakable product of Birmingham, who has transcended his antecedents, and by virtue of his individual endowments, has improved the environment for all who live in his native city, has quickened our national life, and, setting at naught geographical restrictions, has done something to consolidate a world-wide Empire.

In the history of medicine every chapter might have as its

heading the name of a great surgeon or physician. In the biographies of Linacre, Sydenham, Harvey, and Jenner, distinctive steps in advance may be measured and connected with personal initiative ; and in every branch of medicine and surgery as they are to-day, excellent though the work accomplished by the rank and file may have been, a few great pioneers have determined and guided progress. In my own department, neurology, it is certain that progress has hinged on the genius and labours of a few great men—Charles Bell, Marshall Hall, Claude Bernard, Brown Séquard, and Hughlings Jackson—and I cannot conceive that it would have been in the forward position in which it is, had any one of these been missed out. Neither can I conceive that, had any one of them failed to appear, some understudy would have been supplied by the geographical and social conditions of the period to fill his place. At this hour we have amongst us, in the circle of our profession, a brilliant example of the great man, who changes for ever the environment in which he finds himself. It will not be gainsaid that Lord Lister has once for all and profoundly influenced the practice of surgery and medicine. Without a forerunner except Pasteur, by methods strikingly novel, in the strength of a fresh variety of intellectual power, he has reached discoveries which have already given check to the cosmic process in certain directions, and which must ultimately benefit the whole human race.

We have spoken of the influence of greatness in the creation of environment, but we must not overlook the less conspicuous but more widely diffused influence of men who are not great but still possess individual initiative. Every man may be a great man in a small way, and leave his social environment better or worse than he found it. The arc light, like genius, lifted aloft scatters its radiance afar and, like genius, is apt to flicker and splutter in doing so ; but the glow lamp, like the patient drudge, in its lower and narrower sphere, emits a useful and a steadier light, one glow lamp differing from another in glory. And so each average man may not only fill his average place, but by virtue of his little individual talent do something to increase or

diminish the momentum of the social movements that are going on around him, and bring about, no matter on how small a scale, a recasting of social relations. For each man is a variation, even if only in an infinitesimal degree, from all the men who have preceded him. The zoological man in him is a settled affair, but the human constituent is still in a state of flux, and it is for the new combinations that it effects that we are constantly watching with such intense interest. Variations are, as we know, more frequent under domestication than in a state of nature, and have a wider range in civilised than in barbarous races of mankind. In the faces of our own country people we see greater anatomical differences, a richer play of expression, than is to be observed amongst negroes ; and as regards some of the lower types of our species, it would almost take a shepherd with his eye trained in ovine physiognomy to distinguish one man from another. But the face is a screen on which are projected the dioramic, I might say the cinematographic, changes of the brain within, and it is the brain that is the great theatre of human variations in these days. Without referring to its intimate structure, we can see in the fissuration of its surface that it has in every individual a personal identity of its own ; while in the products which accompany its functional activity we find idiosyncratic differences in every case. Sensations, ideas, emotions, active tendencies, are the flora and fauna of the brain ; and these, while subject in the main as regards their general character, their form, order, and associations to the influence of heredity and environment, are yet constantly exhibiting new growths and features, random and discontinuous variations. We have amongst them many familiar types, but we have also startling novelties, hideous monstrosities, and beautiful and useful developments. And in this flora and fauna of the brain selection is ceaselessly at work—environmental selection—the climate for them is made up of emanations from other brains, and what may be termed artificial or deliberative selections, which I wish to emphasise as the basis of that mental discipline which is so essential to all ethical life. We can within limits regulate our own brain crop. We can weed it

and fertilise it, and we can do this by an exercise of that voluntary power which is our proudest attribute. Thousands of ideas shoot up in the mind for one that survives and becomes operative, and the one that survives does so because it is selected by the will. The real force of ideas, said Fichte, is not in the ideas, but in the will of the person who selects them as his.

I do not forget, of course, that the very existence of this will, for which I am claiming such autocratic power, is more and more ingeniously disputed as mechanical physiology advances; and you will, I am sure, be relieved when I tell you that I do not here propose to embark on another Arctic expedition or balloon voyage into the dark and frigid controversy on determinism and free will. But, as a practical physician, I would just say that I look upon free will as as much a need of the individual and of the race as is fresh air, and that I should regard as a pestilential calamity any widespread abandonment of a belief in it. A sporadic case here and there does not much matter, but anything like a general lapse into downright predestinarianism must mean the extinction of ethics, and a reversion to that cosmic process out of which we have with so much pain and effort worked our way. This argument, the argument *in terrorem* founded on the supposed consequences of a doctrine, is no doubt open to objection, but it is more so in relation to secondary and derivative beliefs than to those that are primary and fundamental. Mr. Balfour has made effective use of it in relation to naturalism, and an appalling picture might be drawn of the results of universal determinism. The illustrations which we possess of its partial ascendancy in Mohammedan races—I say partial, for fatalism is never thorough-going—are sufficiently forbidding, and it may perhaps be a sufficient condemnation of it on the present occasion if I point out that its complete triumph would involve the disappearance of medicine as an art.

It will be well for you during your curriculum to be on your guard against insidious suggestions of wholesale automatism,

for there can be little doubt that the study of reflex action, investigated as it almost invariably is from below upwards, and not from above downwards, predisposes to that faith—an enervating faith—which reduces man to a mere pith ball in the jet of the fountain of events, helplessly tossed aloft, heedlessly falling, ceaselessly moving, as if animated, and yet the mere plaything of external forces. Apart from all the mystifications of logic and classifications of science, we have just as good evidence for the freedom of the will as we have for our own existence. You will feel and know, when you come to think of it, that you are not as Münsterberg would have you believe, a mere sequence of ideas, but have the choice amongst these, and that you are bound to exercise that choice in such a manner as to make your calling and election sure, utilising your gifts, recognising your responsibilities, taking advantage of your variations, and being responsive to your environment, thus fitting the place in which you find yourselves. Hold fast to the importance of the individual. Do not worry yourselves about the insignificance and evanescence of man.

You are here, gentlemen, in an animal world and an ethical society; you are variations (each of you is a variation), the outcome either of ancestral conditions or of an inherent vital impulse; and you have been selected, you have not been found unfit for survival and condemned to perish. You have escaped the perils of the embryo, of gestation, and parturition; you have fought your way through the legions of pathogenic bacteria that lie in wait for infancy and childhood; you have survived the break-neck hazards of boyhood, and even football has not put an end to you; you have not as yet been devoured by the examination beast of prey; you have proved yourselves adapted to the climatic conditions in which you find yourselves, and have been able to provide yourselves with ample nourishment. You have struggled up into existence so far, and have shown that with individual traits in every case you are all more or less adapted to your environment. And now selected, vaccinated, educated, you are about to enter on an entirely new environment as stu-

dents of medicine, an environment which will again select and sort you, and, perhaps, in a few instances—I trust a very few—reject you altogether, and which will at the same time remodel those of you whom it selects, and prepare you for still another and more trying environment which you will enter when you go forth from this college as practitioners of medicine. And in that environment by which you are now encompassed, and still more in that larger environment that looms before you, you will, I predict, discover that harmony with your surroundings and blessedness for yourselves are promoted by keeping constantly in view the ethical nature of man, on which I have this evening insisted. For you the era of the “ape and the tiger,” of tooth and claw, is past and gone. The instincts and promptings that were uppermost in that epoch, its selfishness, cruelty, ferocity, and destructiveness, are still to be seen at work in the human struggle for existence on every hand, and still assert themselves with greater or less vehemence from time to time in every human breast; but in civilised beings they are dominated and held in check, as we have seen, by a new principle that has intruded into human life—the ethical principle creating a sense of duty and enjoining goodness and virtue. And this ethical principle, or categorical imperative of duty, as Kant called it, or conscience, once awakened in a man, can never slumber again, but if neglected or violated, becomes itself the source of pangs worse than those which are attendant on the natural order of things. For your own advancement and happiness in life you cannot too soon cease to make an idol of the natural man, for the profession you have chosen is the outcome of quite another cult. It is the highest expression of the humanising process, as opposed to the cosmic process, and its great aim is to assuage the sufferings and heal the wounds of those who have been worsted and trodden down in the struggle for existence, and to mitigate the asperity of that struggle. In the cosmic process pure and simple the medical man is a troublesome meddler, promoting the survival of the unfittest and protracting the miseries of the condemned. At a recent meeting of the

Medico-Legal Society of New York, it was gravely argued that suicide is, under certain circumstances, to be professionally recommended, and that in cases of incurable, fatal, and agonising disease, the physician should be empowered to terminate life by what is designated "homicidal euthanasia." If you would justify your professional existence to yourselves, you put aside such extravagances and must early attune your ear to those ethical harmonies which mingle with the fierce discords of the strife, and which happily grow more and more audible as time rolls on.

I admit that it is not always easy to pay due allegiance to ethics. It takes some courage in those who have contracted the material tenets and tendencies which elementary studies in medicine are apt to engender, to admit, even in the company of Huxley, that the cosmic process has broken down and that we must go back to ante-evolutionary principles. It requires ethical strength to be ethical. Revolt has always had a charm for the young. Agnosticism has almost come to be regarded as a sign of intellectual virility, reverence as weakness of the knees. But ethical facts, which even agnosticism cannot relegate to the category of superstitions, stare us in the face, and an early recognition of their significance will help us to accommodate ourselves to our situation. Renunciation, self-discipline, respect for the rights of others and of the community, not only save us from blank despair, but ensure the easiest adjustment to the existing state of things.

To the medical man in actual practice a perpetual remembrance of man's ethical nature, of that in him which transcends the animal and makes for righteousness, of the union in him of *l'esprit divin* with *la bête humaine*, is of paramount importance. He has to minister to more or less ethical beings, who will not be content to be treated as bits of mechanism, and the highest diagnostic skill and therapeutic precision will not save him from failure if he lacks sympathy with human suffering and frailty, and is unable to understand the emotional as well as the muscular heart. In his professional work, too, he hourly

requires the support of ethical principles in himself, and an ethical outlook to guide him amongst the subtle moral problems that are submitted to him, and to support him in his resistance to the appeals of the natural man, who is still the slave of his animal instincts and destitute of spiritual ideals.

Unhappily, the loose talk of the period and the literature of the day too often pander to the natural man, and extol the wisdom of following nature. It is fashionable not to be strait-laced, and great writers have not hesitated to tell us that it is the libertine who has grasped the true meaning of life, and that it is foolish to plague ourselves with remorse for acts dictated by desires of natural origin. One of our most powerful novelists, Mr. Hardy, has frequently shown a tendency to assimilate the moral to the natural, and, as Professor Seth, the present highly gifted incumbent of the Chair of Logic and Metaphysics in the University of Edinburgh, points out, has in a conspicuous instance in his "*Tess of the D'Urbervilles*," sought not only to extenuate vice, but to transmute it into virtue by quoting for it a feral sanction and ensample. Tess, fallen from her innocence, is wandering in the woods, a prey to self-reproach, "terrified without reason" by "cloud of moral hobgoblins." "Walking amongst the sleeping birds in the hedges," writes Mr. Hardy, "watching the skipping rabbits on a moonlit warren, or standing under a pheasant-laden bough, she looked upon herself as a figure of guilt intruding into the haunts of innocence. But all the while she was making a distinction where there was no difference; feeling herself in antagonism, she was quite in accord. She had been made to break an accepted social law, but no law known to the environment in which she fancied herself such an anomaly." Now the purport of this plainly is that the social or moral law is a mere convention, and that the true code of conduct is to be found in the woods and fields—a code in which, as I need scarcely indicate, the depths of iniquity may be legitimatised. A convention no doubt the moral law may be said to be, framed as it has been out of the tacit or verbal agreements of assemblages of human beings, but it

is the convention that holds society together, and prevents universal anarchy, and, therefore, it is lamentable to find it seriously impugned even by men of science, M. Letourneau, for instance, Secretary of the Anthropological Society of Paris, contemplates with complacency the slow disintegration of the marriage tie, as evidenced by the gradually increasing number of divorces and illegitimate births in all civilised countries, and predicts that while monogamic marriage may continue to subsist, because the balance of the sexes makes it almost a necessity, it will be largely emancipated from legal restraints and become a free union, freely contracted, and, if need be, as freely dissolved. As a corollary of this freedom in marriage, M. Letourneau tells us the family tie must also disintegrate. This final collective unit of society—the family—must be broken up, and a larger collective unit—the State, the district, or the commune—must assume the rôle of guardian and educator of children.

I do not introduce to you such mischievous nonsense for the purpose of refuting it—that seems superfluous—but to illustrate the inevitable and pernicious consequences of including man in the strictly natural order of things and ignoring his moral obligations, and to enforce my thesis that medical men are now more than ever in need of sound and definite ethical standards.

I shall not be wrong in saying that, as the result of the wide dissemination of teachings and opinions such as I have quoted, the medical man is now frequently confronted by singularly confused and distorted moral views, the consequence of a kind of ethical astigmatism that is abroad. He is invited to give a professional prescription for incontinence or infidelity, or a scientific indulgence to bow down in the temple of the great goddess Lubricity. He is even complacently approached in the hope of securing his assistance in a breach of the criminal law. It is not for him to be extreme to mark what is done amiss, for he comprehends better than others the infirmities of the flesh, and his pity shelters what his judgment condemns. It is not for him to scruple to adopt measures to prevent the

spread of disease, because, perchance, these measures might confer impunity on vice. It is not for him to censure or reproach those who seek his aid, however obviously their maladies may have arisen out of their own transgressions; that they are suffering is a sufficient passport to his skill. But it is for him when occasion arises to uphold the moral law, which is a bulwark of health as well as the chief cornerstone of felicity, and neither by connivance nor silence to countenance any infringement of purity of life. It is for him to inculcate, when the season serves, the injunction that closes the pathetic epitaph written by a wayward son of genius for himself:—

Know, prudent cautious self-control
Is wisdom's root.

Well, gentlemen, it only remains for me, on behalf of the seniors of the profession you have adopted, again to greet you on passing its portals, and in doing so we have nothing but words of good cheer to speak to you. We shall not, assuming the routine attitude of veterans towards beginners, tell you that

We, nearer to the wayside inn
Where toil shall cease and rest begin,
Are weary thinking of your road.

Rather we would assure you that we regard with envy the pilgrimage before you—a pilgrimage in which weariness is forgotten in the absorbing interest of the route—and that we would gladly share with you your toils in order to be partakers in the enlightenment that is in store for you. We seem to be on the eve of great discoveries. The universe is not played out. The globe is not yet ripe for its fall. The film of organic matter that mantles on a portion of its surface is not an exhausted ferment. The possibilities of the future are infinite, and amidst the possibilities of the near future are rapid advances in our knowledge of disease and in our power of preventing it.

And even if the discoveries we anticipate do not come in your time, you are still to be envied, for the career you have chosen is a beneficent and a happy one. It may not bring you the rewards most coveted in these days of exorbitant luxury—piles of jaundiced metal for yourselves and bits of glistening

carbon for your wives—but it will yield you an honest competency and the satisfaction of knowing that you have earned your wages. It may not raise you to social distinction, but it will reveal to you in time that there is one thing more precious than fame, and that is obscurity with work well done. Even the sad circumstances under which you must pursue your calling will not rob it of its charms. You will move daily amidst the dolorous shades of disease, and will become familiar with the pallid visage of death; you will see more of sorrow and anguish than other men, and yet you will not abandon faith in life, nor will the springs of hope be frozen within you. In your incessant conflicts with the powers of darkness you will lose the dread consciousness of their stupendous power. In your practical efforts to do good you will come to perceive “a soul of good in things evil.” By the very fatigues and hardships of your lot a keener zest will be added to existence, for that bread is sweetest that is eaten in the sweat of the face. “The sovereign source of melancholy,” says a brilliant transatlantic philosopher, Professor James, “is repletion.” “Need and struggle are what incite and inspire us; our hour of triumph is what brings the void. Not the Jews of the captivity but those of the days of Solomon’s glory are those from whom the pessimistic utterances of the Bible come.” It is idle men or men of studious and reflective habits that *tedium vitæ* chiefly visits, not those who have to wrestle with strenuous responsibilities. No doubt men of melancholy temperament, constitutionally insusceptible of happiness, enter the medical profession now and then; no doubt weakly members of it break down here and there under the trials and disappointments that are incidental to it and become a prey to misanthropical gloom; but, taken as a whole, I maintain that the medical profession is of all professions the most cheerful and contented. Meetings of medical men are, in my experience, all but invariably characterised by geniality and good humour, notwithstanding acute differences of opinion. The doctor’s home is for the most part bright with domestic sunshine. The doctor’s heart is never soured, but

overflows to the last with "the milk of human kindness." I could draw a contrast, but I refrain.

Let me congratulate you, gentlemen, on your adhesion to what is an anxious and laborious but an ennobling and satisfying profession. "The claims of the future," said Lord Beaconsfield, "are represented by suffering millions, and the youth of a nation are the trustees of posterity." The future is yours. The suffering millions cry aloud for help. In the faithful execution of the trust confided to you you will reap "an exceeding great reward."

THE TREATMENT OF ENLARGED PROSTATE.*

BY ALBERT LUCAS, F.R.C.S.

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THIS subject has of late attracted much attention, and although much has been written upon it no definite line of treatment has been agreed upon by surgeons as the best. The treatment is often not very satisfactory; many operative procedures have been suggested and asserted by their authors to be certain methods of complete cure. There seems at present not to be any which will give a good result in all cases.

Hypertrophy of the prostate occurs in about one-third of all males who have passed the middle period of life, but in only about 10 per cent. does it give rise to any symptoms of pathological importance, and then not till after the age of 50 to 55 years. That enlargement of the gland does take place before the age of 50 there can be no doubt, from the information gathered from the operating theatre and the mortuary; a case was seen by me in which the enlarged prostate induced severe symptoms in a patient aged 48.

The hypertrophy may vary in some of its features, but as a

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rule consists in a general enlargement of the gland in all directions, together with the development within it of separate tumours resembling uterine myomata. The increase in size is due to overgrowth of the fibrous and muscular constituents of the organ, the glandular elements remaining almost unaffected. Either the lateral lobes may be one or both enlarged or the median lobe. Comparatively small enlargement of the latter is the one which gives most trouble, producing a bar extending up into the bladder and blocking the orifice. The lateral lobes may compress the urethra into a mere slit, may elongate it so that the urethra may measure three or four inches more than normal, or may twist or distort it. A question of some interest is the development of the posterior pouching of the bladder. Is this due to the apex of the prostate being held in position by the posterior layer of the triangular ligament? As the gland enlarges it does so in a backward manner and carries with it the neck of the bladder, or is it due to a forward growth of the prostate? The latter appears the more correct explanation.

McGill classifies the various forms of hypertrophy which produce symptoms into, 1st, a projecting middle lobe pedunculated or sessile; 2nd, enlargement of the middle or both lateral lobes; 3rd, enlargement of the lateral lobes only; 4th, a uniform collar-like projection encircling the orifice of the urethra. Any other enlargement does not usually cause symptoms. It is not difficult to prove that the prostate is enlarged, but it is difficult to satisfy oneself of the exact nature of the enlargement. The enlarged lateral lobes can always be felt, and their size estimated pretty well by the finger in the rectum. An overgrowth, whether sessile or pedunculated, of the middle lobe alone cannot be ascertained per rectum, although it may give rise to most distressing symptoms; nor can the collar-like growth which encircles the orifice of the urethra be diagnosed with certainty,

The treatment is either palliative or operative.

Firstly, Palliative.—As long as a patient is able to get along without marked distress it is my opinion that nothing operative

should be done. If after passing a soft Jaques' or black olivary-headed or Condé catheter a man can sleep without having to get up more than once a night to make water we should leave him alone. By avoidance of excess of stimulants, and keeping the bowels open, much may be done. Retention of urine may also occur from congestion of the enlarged prostate in a patient who from some reason or other has had to hold his water longer than usual. A soft rubber (Jaques) catheter is the one which should always be given to a patient by preference. I have known considerable injury follow even the use of a black French gum elastic catheter. If a Jaques cannot be passed then we shall have to resort to the gum elastics.

Operative Treatment.—Under this heading very much has been written during the last three or four years, since Ramm, of Christiania, and J. W. White, of Philadelphia, published at about the same time their first cases of castration and suggested an entirely new method of treatment. Until this time the only operative measures practised were suprapubic and subpubic cystotomy, with or without removal of a part of the prostate. The late Mr. McGill, of Leeds, in 1889, brought before the British Medical Association a series of successful cases of prostatectomy by the suprapubic route. He published 24 cases performed by him and the Surgeons at the Leeds Hospitals, with a mortality of 16.6 per cent. Not at all a bad result considering that in many of these cases the condition of the patient was most unsatisfactory; worn out with sleepless nights, urine decomposed, with frequently the ureters and pelves kidneys dilated and the latter inflamed. I think that we may take it from the cases which have since been published that the mortality after suprapubic prostatectomy is about 15 per cent. By proceeding by this route and not by the perineal there are many advantages. McGill states that (1) it is generally more applicable; (2) it can be performed with greater precision and be completed with greater certainty. It is impossible to diagnose the nature of the intravesical growth with certainty unless the finger is in the bladder; and remember often these cases are complicated with

stone. (3) It ensures complete and most efficient drainage, a matter to my mind of great importance. (4) It is equally safe. I prefer to open the bladder by the high operation in preference to the lower. To my mind there is not so much difficulty, and with due care no danger of wounding the peritoneum. For these reasons, therefore, if any operation has to be done through the bladder I am strongly of opinion that we should proceed by the suprapubic route. Of course often it is a most difficult matter to enucleate a growth from the prostate, particularly is this the case when the symptoms arise from enlarged lateral lobes and the collar-like growths around the urethral orifice. Suprapubic prostatectomy is most applicable to cases of pedunculated middle lobes. The other surgical procedures which have of late been much discussed are orchectomy, single or double, and vasectomy.

As to the rationale of these procedures it is well to consider the functions of the testicle. That there is a close relationship between the testicle and the prostate few will be inclined to doubt. I am inclined to think that it is not quite so intimate perhaps as that between the ovaries and the uterus, where we have known for a long time that fibro-myomata very quickly diminished in size after the operation of oöphorectomy. John Hunter, a long time ago, pointed out that the prostate withered after castration. Griffiths, of Cambridge, states that "after a year or more it becomes transformed into a mass of fibrous connective tissue which contains the remains of the once active gland tubules and a small number of atrophied muscle fibres scattered here and there." He also states that the prostate of eunuchs is as small as that of a child. Dr. J. W. White, the greatest advocate of double orchectomy, experimented on dogs, and found that great wasting followed castration. In many cases the prostate has been examined a few days or weeks after death following castration, and degenerative changes have always been found. Unilateral wasting of the prostate also follows removal of the testicle on that side. To what is the shrinkage due? The idea generally held is that it is due in the first instance to

reduction of the hyperæmia by reflex contraction of the vessels. The real atrophy which subsequently takes place has been accounted for in the following manner by Griffiths:—He suggests that the testes have a two-fold function, viz., (1) to control and determine the characteristics of the male sex, and (2) to produce spermatozoa for the reproduction of the species. In the performance of the first function it is probable that a physiological product is formed which becomes absorbed into the circulation and acts as a stimulant and nutrient to the tissues of the whole body. Dr. McEwan, of Dundee, from whom I am now quoting, thinks that besides the general vitalizing property of the first product it may have a special influence on the accessory glands, including the prostate, and may be essential to their nutrition and growth. Another point of interest is, that in some of the testicles removed for enlarged prostate spermatozoa have been found quite healthy, in others the spermatozoa-producing parts had undergone involution. Another point to be considered, is the enlargement due to reflex nervous origin. It has been stated that wasting of the fibroids of the uterus is due to the severance of Johnston's nerve; may not this have something to do with the improvement. In performing vasectomy it is advised to tie and remove tissues in the region of the vas as well as that duct so that we may perhaps also catch that corresponding nerve. I only throw this out as a possible suggestion. We have not, I think, at present sufficient evidence to show that every variety of prostatic overgrowth is favourably affected by removal of the testes.

As to results—White, in the *Annals of Surgery* for 1895, published 111 cases; the conclusions he arrived at are—(1) That in a very large proportion of cases, 82 per cent., rapid atrophy follows. (2) Disappearance or great lessening of cystitis in 52 per cent.; return of more or less vesical contractility in 66 per cent.; amelioration of the most troublesome symptoms in 85 per cent.; a mortality of 18 per cent. As high a mortality, if not higher, than after prostatectomy.

A man, aged 56, was admitted to the General Hospital under

my care on April 1st, 1894, with severe hæmorrhage from passing a catheter for enlarged prostate. Injections were tried without any success, therefore the bladder was opened suprapubically and drained. The prostate was much enlarged, there was a small sessile overgrowth of the middle lobe. At this time there was so much cystitis that I did not attempt removal. He remained under my care for some months. In January 1895 he returned with hæmorrhage again. On January 18th, after having obtained his consent, I removed both testes and enlarged the suprapubic opening which had never quite closed. The middle lobe had considerably increased in size. I kept him under observation in the Hospital for seven weeks; during that time we were never able to assure ourselves that the prostate as felt per rectum had decreased in size. On April 1st, the last time I saw him, he seemed much better. The fistula had nearly closed. He stated that he passed water much more easily than before the operation, three or four times at night and the same number during the day. I was certainly disappointed in not having a better result.

Cabot, at a meeting of the American Surgical Association speaks very strongly against castration and in favour of prostatectomy. He maintains that (1) the mortality if anything is less, (2) Prostatectomy allows a complete examination of the bladder. (3) He admits that it has the disadvantage of keeping the patient longer in bed and is often followed by a fistula. (4) Again there is the question of loss of vigour after castration, and nervous symptoms which often follow. (5) The functional results seem about the same, relapses being about equal. (6) The reduction in size is due to diminution of congestion. (7) He also states that castration is of but little use in myomatous and fibrous prostates.

Gabrielson reports a case in which a man was much improved after double castration. Mr. Robert Jones, of Liverpool, reports three cases in which great improvement followed double castration in two, and one of single.

The only other method of treatment I wish to speak of is

vasectomy. If this can be proved to succeed as well as castration or prostatectomy there can be no doubt that it should be performed in preference to the more severe procedures.

Mr. Reginald Harrison was the first to suggest it. He has now performed it several times and speaks favourably of the results. He advises first resection of one vas and subsequently of the other in a month's time if there is no marked improvement. The rationale of the operation is that division of the vas causes subsequent wasting and atrophy of the testis, following on which atrophy of the prostate supervenes.

Pavone has collected 34 cases; 4 died from other causes, 2 negative result, 28 either cured or improved. In all these cases a portion of the vas was excised and the ends twisted in order to ensure complete closure.

Nové Toperand also reports three cases in which great improvement followed.

Mr. Jones, of Liverpool, also records a case of vasectomy in which great improvement followed.

Towards the end of last August a man aged about 65, who has been an out-patient of mine for nearly four years and has been using a catheter, was admitted under my care with 10 oz. residual urine. On August 27th I performed double vasotomy, making a small incision over each vas, ligaturing them in two places and dividing between. I wished to keep him in the Hospital for some weeks for observation, but he was unruly and had to be discharged.

On Sept. 30th he stated that he was much improved. On Oct. 21st, same, micturates much less frequently than before operation. On Jan. 6th he stated that he was no better than before the operation, much to my regret. On Feb. 17th he stated that he had more pain after micturition and had to get up three times at night.

Fer Rectum.—The prostate gave me the impression of being much smaller than before the operation, the right testis was a little atrophied, the left not altered. He is a very stupid unreliable man.

The other case came in with acute retention. Vasectomy was done on both sides, but the urine had become very foetid, and he developed acute surgical kidneys and died, but not as a result of the operation. At the *post mortem* it was found that he had a pedunculated middle lobe, and I much regret that I had not done a suprabubic cystotomy.

I have tried to lay before you the present state of affairs as regards this subject. We have as yet hardly had sufficient time to come to a definite conclusion as to whether Prostatectomy, Orchestomy, or Vasectomy is the better procedure. I am myself coming to regard Prostatectomy as the right or more surgical method. If we find on opening the bladder that it is impossible to remove the growth, then do castration if the patient has previously consented.

CARCINOMA OF THE BREAST, FOLLOWING A TUMOUR OF THE NIPPLE.

BY T. LAW WEBB, M.R.C.S., L.R.C.P. LOND.

MUCH has been said and written about the "pre-cancerous" stage of malignant growths of the breast; and certainly any morbid conditions which appear to precede the formation of such growths deserve the most careful study. The chronic eczema of the nipple, first studied and accurately described as a precursor of Cancer by Sir James Paget, is not very uncommon, and has received much attention at the hands of Clinicians and Pathologists; so much so that the general appearance and character of this disease is well known to practitioners everywhere. The fact that this eczema is invariably followed, sooner or later, by Carcinoma of the breast, has been confirmed over and over again, and surgeons now are fully aware of the gravity of the prognosis in such cases.

In cases of "Paget's disease" of the nipple it is supposed that

the morbid process, beginning in the skin of the areola and nipple, travels along the lactiferous ducts and thus at length reaches the acini of the gland. And it is probable that this is the order in which the disease progresses. But in the very great majority of cancerous breasts the mischief begins in the body of the gland, the nipple and areola remaining for a long time apparently healthy and free from cancerous change. Indeed, they appear to be the last part of the organ to be affected by the advancing growth. I have recently, however, met with a case of cancer of the breast which commenced in an unusual manner, and which seems to me to be worth recording. In this instance the trouble began as a tumour growing from the base of the nipple, just where it joins the areola. When the breast was removed this little growth had attained the size of a large pea. It was a plump, rounded, reddish, vascular-looking offshoot from the nipple. Its surface was smooth and quite free from the roughness and uneven hypertrophied epidermis of a papilloma. As far as I can make out, it was first noticed about eighteen months ago (that is to say, soon after Christmas 1895). At first not much attention was paid to the nodule, which grew but slowly. After some time, however, a suspicious hardness in the breast caused the patient some anxiety, so that in July last (1897) she consulted a surgeon, who diagnosed Carcinoma of the breast, and advised immediate removal of the whole breast and axillary glands. Dr. A. G. Mackenzie, of Much Wenlock, operated, and kindly sent to me, for examination, the whole breast with the attached nipple-growth intact. Some lymphatic glands from the armpit were also sent.

Dr. Mackenzie tells me that the patient, a lady aged 49, had noticed that latterly the part had somewhat rapidly increased in size; and that when operating he had found the growth and surrounding tissues exceedingly vascular. After careful hardening, sections were made from the breast, lymph glands, and tumour of the nipple. On examining these it was clearly evident that the breast tissue itself was entirely replaced by masses of typical Carcinoma. One of the lymph glands was infected also with

a growth having the same structure. The small tumour of the nipple was examined with special interest. Sections had the general appearance of what used to be called "Atrophying Scirrhus." A dense and plentiful fibrous matrix contained here and there narrow, elongated alveoli, stuffed with morbid epithelium. The long axis of each alveolus was more or less perpendicular to the free surface of the nodule, and the grain of the fibrous tissue of the ground substance had the same direction. The connective tissue was well developed, with no signs of rapid growth or proliferation of cells. The epithelial cells of the alveoli were shrivelled and small, very irregular in shape, and of various sizes. Many had lost their nuclei and showed degenerative changes, the staining reactions being also abnormal and irregular. Altogether, the appearances noted were such as are generally seen in those parts of a slowly-growing cancer which are commencing to atrophy, and in which active cell-division has ceased. Thus the microscopic characters of the nodule, as well as the clinical history, point to the conclusion that the malignant growth began in the nipple and afterwards spread to the mammary gland. I may add, that there was, in this case, no eczema of the nipple. Indeed, save the small tumour at its base, the part was perfectly healthy and normal.

I have never before seen a Scirrhus of the breast commence in this way; and I imagine such cases must be rare. I have not, however, had an opportunity of making a search into the literature of the subject, and therefore am unable to say whether other observers have recorded instances of Cancer originating in new growths from the mamilla.

NOTES ON A CASE OF HYDATID CYST OF THE GALL BLADDER.

(UNDER THE CARE OF MR. BARLING.)

REPORTED BY E. T. BURTON, M.R.C.S., L.R.C.P.
HOUSE SURGEON AT THE GENERAL HOSPITAL, BIRMINGHAM.

S. R., æt. 46, a labourer, was admitted to the Hospital on June 19th, 1897, complaining of persistent vomiting and violent pain in the right side of the abdomen for ten days. The onset was very sudden, and he noticed that he became jaundiced twenty-four hours after the attack commenced. Within the preceding eighteen months he had had five or six similar attacks.

Patient had been a soldier and had served in India, Afghanistan, and Egypt, and had had remittent fever, ague, syphilis, and gonorrhœa. He had also had, according to his statement, a "touch of Hepatitis" in 1876. His mother died of cancer, otherwise his family history is of no importance.

On admission to the Hospital he was intensely jaundiced and perspiring very profusely. T. 101°, P. 84, R. 32.

On examining the abdomen it was found to be full, especially the upper part, and did not move freely with respiration. Palpation revealed that the liver was generally enlarged, reaching nearly to the umbilicus in the right vertical nipple line. The whole abdomen was tender, but especially so in the right hypochondrium, and to a less extent in the left. The surface of the liver was smooth and hard. No localised enlargement was felt. On percussion the liver was found to be enlarged to the extent mentioned above. The rest of the abdomen was resonant and there was no ascites.

Patient had been very constipated during this last attack. In previous ones his motions were of a light clay colour, but in this they were black. He had continuous retching and

frequent vomiting; the vomited matter was as a rule frothy mucus or food previously swallowed, and it occasionally contained blood.

He was admitted with a view to laparotomy being performed, but his condition was not such as to allow it. His pain was to a certain extent relieved by hot fomentations and hypodermic injections of morphia, and he was fed per rectum on account of his continuous vomiting. He passed very little urine (about seven ounces daily) containing bile pigments and a cloud of albumen, and perspired profusely. Three days after admission he had a slight twitching followed in half an hour by a severe convulsion, uræmic in character, and died a few hours later.

Autopsy, twenty hours after death.—*External appearances*.—Rigor mortis was absent and the whole body was in an advanced state of decomposition. There was general *post mortem* emphysema of the subcutaneous tissues, muscles, and all the viscera. The scrotum was enormously distended with gas, and there was jaundice of all the tissues. Thoracic viscera, intestines, kidneys, and spleen showed nothing abnormal. The *liver* contained numerous small cavities filled with gas from decomposition. In the wall of the gall bladder on the left side was a hydatid cyst the size of a large orange. The cyst lay just beneath the anterior margin of the liver, to the left of the gall bladder and projected below it. On the wall of the cyst just below the margin of the liver was a thick ridge of dense fibrous tissue of cartilaginous hardness. The cavity of the cyst communicated with the gall bladder by an opening $1\frac{1}{2}$ inches wide, and the gall bladder as well as the cyst itself was full of daughter cysts of various sizes. Several of these had blocked the cystic duct. Opening out of the cystic duct was a cavity the size of a walnut which was also full of daughter cysts.

REPORTS OF CASES.

THREE CASES OF OVARIAN DISEASE.

BY C. E. PURSLOW, M.D. LOND., M.R.C.P. LOND.

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MASON COLLEGE;

HONORARY MEDICAL OFFICER, BIRMINGHAM LYING-IN CHARITY.

THE following cases have seemed to me worthy of record, they were all operated upon by abdominal section in the Queen's Hospital between March 7th and April 10th of the present year, and each presented a different disease of the ovary.

The first, A. S., æt. 23, admitted March 1st, 1897, gave the following history—Married four years. Two children, last three months ago. No miscarriages. Menstruation always regular.

Present illness dates from last confinement three months ago, patient was attended by a midwife, and on the second day was seized with very severe headache, delirium, and fever and suppression of lochia; after passing through a severe attack of septicæmia, she gradually improved, and left her bed at the end of a month.

On admission, she was anæmic and much emaciated, and complained of pain in left side of abdomen.

On pelvic examination, the uterus could be felt bimanually and was apparently normal, it was pushed forwards by a large mass in the Pouch of Douglas, and the left lateral and posterior fornices were bulged down towards the vagina. No distinct fluctuation could be made out.

Pelvic abscess was diagnosed and patient was placed under an anæsthetic and put in the lithotomy position with the intention of opening the abscess per vaginam; before making an incision, however, I examined carefully bimanually, and from the feeling of the mass I came to the conclusion that it was distinctly an

encysted collection of pus. Patient was then drawn up the table, and the abdomen opened in the usual way in the middle line. An ovarian cyst was removed, its walls were very rotten and broke away under the forceps, and some of the contents escaped into the peritoneal cavity during the tapping of the cyst, which contained about one pint of pus, in a single cavity.

The pedicle was ligatured with silk, the abdomen washed out and a glass drainage tube inserted; the latter was removed in 24 hours. Patient made a satisfactory recovery and left the hospital on the 26th day after operation.

The interesting points about this case appear to me to be—

First.—The fact that the attack which followed the confinement would have been indistinguishable from an attack of puerperal fever, unless the local condition could have been made out by bimanual examination.

Second.—The close resemblance the physical signs at the time of operation bore to those of a pelvic abscess. Had the latter been the condition present it would undoubtedly have been best dealt with by vaginal incision, whereas it is very doubtful whether opening per vaginam would have cured this case.

A. O., admitted March 23rd, 1897, æt. 27. Three children. No miscarriages. Last confinement five months ago. Delivered by forceps. Patient was then told by the medical man in attendance that she had a tumour, though she had experienced no symptoms previously. Six weeks after the confinement patient had to take to her bed again with an attack of "inflammation." She kept her bed one week, and since then has been in fairly good health.

On examination, by the bimanual method, a distinct rounded tumour could be made out in front and to the right of the uterus. The uterus was not fixed, and the sound passed 2½ inches.

On March 27th, the patient was anæsthetized and the abdomen opened in the middle line. The tumour was found to be adherent to the omentum, small intestine, and vermiform appendix. The cyst was tapped with a trocar, and, after evacuation, the adhesions were separated and the pedicle tied and the

cyst removed. The fluid withdrawn looked like pus and a few minutes after removal set just like "dripping," the cyst contained hair and a tooth. The patient made an uninterrupted recovery, and left the hospital on the 27th day after operation.

Remarks.—The points of interest about this case appear to be—*first*, the absence of symptoms: this is a not infrequent occurrence with dermoid cysts, but nevertheless when discovered they should be removed by operation, as a dermoid cyst is always likely to prove a source of danger.

A second point of interest about this case is that the cyst lay in front of the uterus, the latter being pushed back towards the sacrum, thus contrasting with the last case in which the opposite condition was present. Although the tumour grew from the left ovary it was lying more on the right than the left side of the uterus, and had formed an adhesion to the vermiform appendix.

I have twice previously seen dermoid cysts lying in front of the uterus, and it appears to me that dermoids are more frequently found in that position than are other forms of ovarian tumours.

The third patient, J. P., æt. 29, was the mother of two children, the last five years ago: no miscarriages.

Twelve months ago believing herself to be pregnant she passed a knitting pin with the intention of bringing on abortion; four days later she had to take to her bed with severe abdominal pain and shivering; and three weeks later she was admitted under my care. She was then suffering from rather severe pelvic peritonitis. She was kept in bed for three weeks, and as the symptoms then subsided she was allowed to go home, no operation being performed. From that time she had been attending as an out-patient; the pains had persisted, being worse at the menstrual periods though she had been able to get about. A mass could be felt behind and to the left of the uterus, causing fixation of that organ.

As the patient was losing ground she was again admitted on April 5th, 1897, and on April 10th the abdomen was opened in the middle line.

The left ovary and tube were found enlarged and bound down by firm adhesions to the back of the uterus and the side of the pelvis ; with considerable difficulty the adhesions were separated by the finger, and the mass dislodged and removed, the pedicle, which was a broad one, being tied with interlocking silk ligatures. The hæmorrhage from the separated adhesions was rather severe. The abdomen was washed out and a glass drainage tube inserted. The tube was removed at the end of forty-eight hours. The patient made a slow but satisfactory recovery and left the hospital on the 28th day after operation.

She has since presented herself as an out-patient and there is a marked improvement in her condition, the pain has disappeared, and she has gained weight.

On examining the specimen after removal, it was seen that the tube was occluded and thickened, but contained no pus ; in the ovary, however, were four distinct abscess cavities containing in all about one and a half ounces of pus.

With reference to this case it may be said that the patient should have been operated on in the first instance, but my reason for not doing so was that I have seen exactly similar masses resolve and cease to give rise to symptoms without being operated on, and in this class of case I am always inclined to wait and see what nature will do before advising an abdominal section.

The fact that the pus was in the ovary, and that the tube contained none, is somewhat unusual, one generally expects to find the pus in a dilated tube if there is any present.

I am indebted to Mr. F. R. Greenwood, Obstetric House Surgeon for many of the notes, and for valuable assistance in the treatment of the cases.

A CASE OF DISPLACED PERONEI TENDONS TREATED BY OPERATION.

BY LEONARD GAMGEE, F.R.C.S.

ASSISTANT SURGEON TO THE GENERAL HOSPITAL;
SURGEON TO THE CHILDREN'S HOSPITAL, BIRMINGHAM.

INSTANCES of one or other of the peronei tendons being wrenched by violence from the groove behind the external malleolus are by no means uncommon, and the accident is always productive of great inconvenience to the patient. For either of the tendons to leave its groove the external annular ligament of the ankle has to be ruptured, and so the violence must be considerable. If, immediately after the tendon has left its groove, it be replaced and kept in position by a pad being placed over it, the foot and leg being fixed in a plaster case, it is quite possible to produce a re-fixation of the tendon in its groove. If, on the contrary, the tendon is allowed to remain in its abnormal position, then the rent in the annular ligament heals, the groove becomes partially filled up, and the displacement of the tendon becomes permanent. It is this latter class of case which it is so difficult to treat. Various forms of apparatus with a spring and pad exerting pressure on the tendon have been tried, but their utility is not great, for on any sudden exertion the tendon again slips out.

It was Mr. Walsham who, in the *British Medical Journal*, Vol. ii., 1895, first described a successful operation for the relief of this condition, and, as not very long after reading Mr. Walsham's paper a case of a similar nature presented itself to me for treatment, I determined to operate according to his plan.

A. G., male, aged 20, was sent by Dr. Congreve Barber, of Small Heath, to see me in the General Hospital out-patient room in May, 1896. The patient said that since he was four years old he had been greatly inconvenienced by a feeling of weakness in his right ankle and by the joint frequently "giving way" beneath him. He walked with a limp, and found it quite

impossible to run upstairs or to walk fast uphill. At times the ankle was so painful as to necessitate his keeping it completely at rest.

On examination, both peronei tendons were found to run down over the surface of the external malleolus instead of being bound down in the groove behind the malleolus. The tendons were freely movable over the surface of the malleolus and the soft parts over them were thickened. Each time the peronei were put into action the tendons slipped quite on to the anterior surface of the malleolus.

The patient could say nothing as to the cause of the condition, and as the use of supports, etc., had failed to relieve him, I determined to operate. Accordingly, on May 6th, 1896, an incision three inches long was made along the posterior edge of the fibula and round to the tip of the malleolus. A thick-walled bursa was found over the tendons, which were flattened out over the malleolus. The tendons were now held in position behind the malleolus, while a flap consisting of periosteum and of the thickened superjacent fibrous tissue was raised. The flap, which was three inches in length, and in width sufficient to stretch right back over the tendons, was turned backwards over the tendons and fixed in this position by silk sutures. The wound healed by primary union and the limb was kept in a plaster case for two months.

Ever since the operation the tendons have kept in position behind the malleolus, and the patient can walk, run, and jump without any inconvenience at all.

A SEVERE CASE OF PAROXYSMAL TACHYCARDIA.

BY DR. W. COLLIER, OXFORD.

THE patient, a man aged 36, was first admitted to the Radcliffe Infirmary, on February 20th, 1895 for severe attacks of dyspnoea and palpitation. He was a compositor by trade, and he stated that the attacks first came on about the beginning of 1890, but were not very severe; between 1892 and 1894 he was free

from the attacks ; he then rode a bicycle from Oxford to Bristol, and from that date to the time of his admission he has not been free a day from attacks of violent palpitation and shortness of breath. His father had died at the age of 42 in an attack somewhat similar to those from which he suffered.

The patient was a well-developed man, about 5 feet 8 inches in height, with high coloured complexion. On examination, the heart was beating quietly and regularly about 80 per minute, and his pulse was fairly strong. Immediately after turning over in bed an attack came on, the pulse at the wrist disappeared, but with the stethoscope over the heart, the cardiac beats could be counted to upwards of 250 per minute. In a short time the patient became extremely cyanosed and apparently quite unconscious, pupils widely dilated. After a few minutes the pulse began to slow down and the patient to recover consciousness, but it was some hours before the pulse regained its old rate. During the next few days the patient had daily one or two severe attacks, so severe that on more than one occasion we hardly expected him to recover. After this the attacks became gradually less frequent and less severe. He had been seen recently by a London physician who suspected either an aneurysm or new growth in the posterior mediastinum, as he seemed to have pressure on the right bronchus leading to diminished air entry to right lung, and also on the venæ cavæ, leading to swelling of the hands and feet. All trace of swelling of hands and feet had disappeared at the date of admission, but a considerable area of dulness close to the vertebral column on the right side between the 6th and 8th dorsal vertebræ was found ; and the air entry on the right side was markedly diminished. In the course of a few weeks the dulness and diminished air entry entirely and permanently disappeared. At times a systolic bruit was heard well to the left of the apex. On this occasion nitrite of amyl and nitrite of sodium were given without benefit. Digitalis and nepenthe were then used with good effect.

Since the date of his first admission to the Infirmary, he has been more or less under observation. Many drugs have been

tried, but the one from which he has obtained by far the greatest assistance has been *strophanthus* in full doses, 7 to 10 minims. The severity of the attacks are not now so severe as they were, but he has to take the greatest precaution against over-exertion and excitement. He states that he can to a certain extent control the onset of an attack, by forcibly holding his breath, or by strong pressure over the sternum, but that he feels worse after doing so.

CHOREA, COMPLICATED WITH PREGNANCY.

IMMEDIATE RELIEF FOLLOWING THE PRODUCTION OF ABORTION.

BY DR. W. COLLIER, OXFORD.

THE patient, a married woman, age 21, with one child a year and a half old, was admitted to the Radcliffe Infirmary, on June 23rd, 1897, suffering from chorea, which chiefly affected the head, face, and right arm. The choreic movements commenced six months before, immediate after a severe fright from being nearly run over by horses. In spite of treatment the movements had increased in severity, hence her admission. On examination it was discovered that she was about four months pregnant. Heart sounds normal and no history of rheumatism. Patient was at once given *liq. arsenicalis* ℥ viii., increased after a few days to ℥ x., thrice daily. On July 5th, in consequence of the development of erythematous rash, the arsenic was omitted for a few days. On July 10th, ℥ xx. were given thrice daily, but was permanently discontinued five days later. On July 3rd, the movements became more marked and patient was unable to obtain any rest without the constant use of sedatives — Chloral, bromides, morphia, sulphonal, chloroform inhalation. The free use of alcohol was tried, but the patient became worse rather than better. The facial movements were so unceasing that the patient had the greatest possible difficulty in making herself understood. At times she became mentally very excited and maniacal.

On July 19, she began to exhibit symptoms of exhaustion, the

pulse becoming rapid and weak. On this evening it was decided to produce abortion, chloroform was given, the cervix dilated, and membranes ruptured, the vagina plugged and an hypodermic of ergotine administered. The following morning, as no progress had been made, chloroform was given, the cervix further dilated, two fingers introduced into the womb, a leg pulled down and a five months foetus delivered, the placenta coming away a few minutes later. The uterus was thoroughly washed out with a strong solution of iodine. The same evening the temperature rose to $105\frac{3}{4}$, was reduced two or three degrees by sponging, and gradually fell to normal during the next 24 hours, patient being given quin. sulph. gr. v. every 4th hour.

From this date forward the patient made rapid improvement, the movements becoming less and less marked and obtaining good rest, all drugs being discontinued. There can be little doubt that in this case the production of abortion saved the patient's life, as from the date of her admission, she had, in spite of all treatment, been steadily getting worse, whereas within 36 hours of emptying the womb, the improvement was so marked as to remove all apprehension as far as her life was concerned.

CASES FROM THE NUNEATON AND DISTRICT HOSPITAL.

BY E. N. NASON, M.D. CANTAB.

Case of Tetanus treated with Tetanus Antitoxin.—On June 10th, Albert R., aged 14, was injured in the left groin by the wheel of a cart under which he had fallen. The skin over Poupart's ligament was torn back and a lacerated dirty wound about $2\frac{1}{2}$ inches wide was the result. This was washed out and dressed antiseptically by Dr. Locket immediately afterwards and the edges drawn more or less together. On June 18th. when the wound appeared to be granulating healthily, slight rigidity about the masseters and the muscles of the neck was noticed. Dr. Locket at once sent the boy into the Hospital where I saw him at 11 p.m. His condition was then as

follows:—Wound in left groin granulating, but upper edge a little redder than natural. Partial rigidity of muscles of jaw and neck, and some slight hardening of abdominal muscles. Occasional slight spasmodic increase of this rigidity. No difficulty in swallowing, much thirst, free perspiration, pulse 78, full and regular; heart sounds natural, except that the first sound was rather sudden. Chloral hydrate, gr. xv., ordered to be given every two hours. Antitoxin was telegraphed for as soon as possible and arrived at 3 p.m. June 19th. This was obtained from the Pasteur Institute, Paris, through Messrs. Burroughs and Wellcome, and half (*i.e.* 5 cc.) was injected at once and the remainder six hours later. Before the injection of the antitoxin the boy was placed under chloroform and the wound freely excised and the raw surfaces thoroughly washed with Perchloride of Mercury Solution, 1 to 500, followed by a free application of pure carbolic acid. The boy's condition, however, became rapidly worse, the spasms becoming more and more violent and distressing and accompanied by much pain. The chloral was increased, but seemed to have little effect, and the boy died early the next morning, June 20th.

This was a very acute case, as death occurred about 48 hours from the commencement of the symptoms and less than ten days after the injury. The Antitoxin apparently had no beneficial effect whatever. A trace of albumen was found in the urine after the injection of the Antitoxin.

Unusual Case of Strangulated Hernia.—John T, aged 30, was admitted on June 21st with the history that the evening before a swelling had appeared in the scrotum and had rapidly increased in size accompanied by severe pain and by vomiting.

On admission, the scrotum was seen to be enormously distended, it was bluish and glazed in appearance, and not unlike a distended indiarubber balloon. The swelling extended along the inguinal canal. The appearance at first suggested a large hæmatocele, but further examination showed that it was a hernia.

After cutting down on to the neck of the sac, which required

more than usual care as there was no perceptible sac wall, the scrotum was found to be packed by numerous coils of blackened small intestine, which lay in the sac of the tunica vaginalis together with a small quantity of blood. The hernia was evidently an instance of a congenital hernia in an adult. Although the little finger could be readily passed through the internal ring into the abdomen the large amount of intestine which had come down could not be returned until the incision had been prolonged well above that point and a free opening made. The coils of intestine were irrigated with hot boric acid lotion before being returned, and the inguinal canal closed as far as possible by deep sutures.

The patient made an uninterrupted recovery.

SURGICAL ABSTRACTS.

BY C. LEEDHAM-GREEN, M.D., F.R.C.S.

THE SURGICAL TREATMENT OF ULCER OF THE STOMACH.

Die Chirurgische Behandlung des chronischen Magengeschwürs.
Prof. Mikulicz, Breslau.—*Berlin klin. Wochenschr.*, Nos. 23, 24, 25, and 26. June 7.

Ueber die chirurgische Behandlung des Magengeschwürs.
Prof. Leube, Würzburg.—*Centralb f. Chir.*, No. 28.

Mikulicz commences his paper by insisting upon the necessity for Surgeon and Physician working together in cases of gastric ulceration on account of the great difficulty in diagnosis and from the need of careful dietetic after-treatment. He then observes that when we ask ourselves how far operative treatment may be extended to uncomplicated cases of ulcer of the stomach, cases in which there is no immediate danger to life, two ques-

tions have to be considered. First, the percentage of mortality accompanying the operation ; second, the amount of relief we may expect from an operative procedure. In considering the former we require to know two things :—The danger to life that an ulcer of the stomach involves, and the risk to a patient from submitting to an operation for it. The first of them it is by no means easy to determine. The published statistics vary greatly on this point.

C. Gerhardt (*Deutsch. Med. Woch.*, 1888, s. 349) states that in ulcer of the stomach 3 to 5 per cent. die from hæmorrhage, 13 per cent from perforation, and 10 per cent. from stricture of the pylorus. Taking the last cases as also fatal, it gives a total mortality of 26 to 28 per cent.

Harbersohn (*St. Barthol. Hosp.*) says that in 18 per cent. perforative peritonitis takes place. In the well-known statistics of Welch 85 per cent. healed and only 15 per cent. died ; of these 6·5 per cent. from perforation, 3 to 5 per cent. from hæmorrhage, 4 to 5 per cent. from pylophlebitis and other complications.

L. Müller, in 120 cases of ulcer found hæmorrhage in 35, 14 of which ended fatally.

Steiner (quoted by Leube) observed 7 fatal cases of hæmorrhage in 120 cases.

Hanser (quoted by Boas) says that from 5 to 6 per cent. of all gastric ulcers become malignant.

Debone and Rémond (*Maladies de l'estomac*, Paris, 1894,) give most unfavourable statistics. In 100 cases of ulcer they report complete healing in 50, perforative peritonitis in 13, hæmorrhage in 5, inanition in 5, death from tuberculosis in 20, other complications in 7 ; giving a mortality of 50 per cent.

We see how greatly these accounts differ, the most unfavourable give a mortality of 50 per cent., the most favourable of 15 per cent. But in the latter (Welch) there were doubtless many complications, such as carcinome, that are not included.

Assuming the correctness of this probability and taking the average of the figures given, we get a total mortality in gastric

ulcer, all complications included, of 20 to 30 per cent. This is certainly a sufficiently high percentage to justify the surgeon in interfering before serious complications set in.

What, then, is the risk to a patient in submitting to an operation for the relief of gastric ulcer?

It is impossible at present to give a precise answer to this question, the number of operations for simple uncomplicated ulcer of the stomach being too few to warrant us in drawing a conclusion from them. If, however, we collect together particulars of all the cases in which an operation has been performed for ulcer of the stomach and its non-malignant complications—such as stenosis of the pylorus, adhesions, etc.—we may find the basis for a valuable induction as to the mortality arising from surgical interference. Here we shall run no risk of taking too optimistic a view, for the results in cases of simple ulceration would surely be better than in those operated upon almost exclusively for severe complications. The following tables will assist us.

I.

Results of operations for non-malignant stricture of the pylorus and ulcer of the stomach without severe complications.

		Number.	Cured.	Died.	Percentage of Mortality.
Billbroth (v. Hacker)	...	20	10	10	50
Czerny		19	14	5	26.3
Mikulicz		36	31	5	13.9
Other operators, collected from various sources	...	163	131	32	19.6
Total		238	186	52	21.8

These 238 cases included operations for—

1. Simple uncomplicated ulcer (a few, scarcely two dozen).
2. Ulceration causing stricture of the pylorus or "hour-glass contraction" of the stomach.
3. Adhesions of the base of the ulcer with the anterior abdominal wall and its neighbourhood.
4. Stricture of the pylorus from the effects of corrosive fluids.

II.

Statistics of the various operations for non-malignant stricture of the pylorus and ulcer of the stomach.

TO END OF 1890.					Percentage of Mortality.
Operation.	Number.	Healed.	Died.		
Resection	28	17	11	39.3	
Gastroenterostomy ..	23	13	10	43.5	
Pyloroplastic	21	16	5	23.8	
Total	72	47	26	36.1	
FROM 1890 TO 1897.					
Resection	18	13	5	27.8	
Gastroenterostomy ...	68	57	11	16.2	
Pyloroplastic	76	66	10	13.2	
Total	162	136	26	16.1	

It is interesting to notice that whilst during the first of these periods the Resection of the ulcer was the operation most commonly performed, during the second period it was the Pyloroplastic.

	BEFORE 1891.	AFTER 1890.
Resection	28	18
Gastroenterostomy ...	23	68
Pyloroplastic	21	76

The more difficult and dangerous Resection has been superseded by the simpler operation of Pyloroplastic. It would be an error, however, to suppose that the latter operation is likely entirely to supplant the other methods. All three have their own indications. We are but learning more precisely to distinguish the indications which should guide us in our choice.

From the foregoing particulars we may, without exaggeration, conclude that the danger to life to a patient from gastric ulcer is at least not less, most probably considerably greater, than that incurred by a carefully conducted operation. In any case, we shall be fully justified in resorting to operative procedure where medical treatment has failed, always provided that our interference promises definite and permanent relief.

We may now enquire—*What measure of relief may we expect from an operation for gastric ulcer?*

Up to this time our experience has been almost entirely limited to cases of stricture of the pylorus, caused either by an old cicatrice or by a still open ulcer. It has now been established that after removal of the obstruction, almost invariably all the consecutive symptoms rapidly disappear; and where, in addition to the stenosis, an open ulcer is present, it also heals. The rapid way in which the patient regains health and strength is remarkable. The gastric pain and discomfort disappear and the digestive power returns.

But what are the results in the cases of open gastric ulcers without pyloric stenosis? Up to the present only a few cases have been operated upon and accurately observed, but these, so far as they go, are very encouraging. There is, first of all, Cahn's well-known case, in which Lücke performed gastro-enterostomy with a splendid result. Success also attended the two cases in which Küster operated in a similar manner for hæmatemesis. Good results have been reported in cases of resection of the ulcer by Hofmeister, Klausner, Mikulicz, and others.

Mikulicz also relates at some length an account of four cases of gastric ulcer cured by him by the pyloroplastic method. In the first two cases, in addition to the pyloroplastic, the floor of the ulcer was excised, and the mucous membrane sutured from within. In the two later cases only the plastic operation was done; the ulcer was untouched. In all four cases every symptom of gastric ulceration ceased almost at once; and what is of especial interest, the excessive production of hydrochloric acid, which had been most marked before the operation, slowly diminished until it did not exceed the normal amount.

The above cases are of great interest, for they show us that it is possible to cure a gastric ulcer without directly touching it, by removing the hindrance to rapid and complete emptying of the stomach; and that whether the hindrance be a cicatricial contraction or a spasm of the pylorus, is apparently a matter of

indifference. This experience stands in complete accord with the prevailing view that stricture of the pylorus, hyper-acidity, and ulceration are most intimately associated and dependent more or less upon each other.

Mikulicz is inclined to agree with the theory of Talma and Döyen that the spasm of the pylorus is primary, for as soon as it is set aside, all the other symptoms disappear.

REVIEWS.

PRACTICAL HANDBOOK OF THE DISEASES OF THE EYE.*

THIS small book of 227 pages is intended for the student unable to find opportunity to take full advantage of the larger text books. We may say frankly that we are doubtful whether such works serve any useful purpose, but at least they should be reasonably free from error and important omissions. In this work no mention is made of bandaging both eyes as a means of obtaining rest for the eye. Calomel is given both under the head of soothing applications and also under those of an astringent and stimulating kind. Under treatment of Symblepharon no description is given of Teale's operation. Follicular Conjunctivitis is not alluded to under diseases of the conjunctiva. In Herpes Zoster no attention is drawn to the tendency to iritis. Ordinary Paracentesis of the anterior chamber is described as Sæmisch's section for Hypopion. Under Paralysis of the circular fibres of the iris from blows, no mention is made of rupture of the sphincter. Chlorosis is given as a cause of Iritis, and if increased tension occurs in this condition, atropine is enjoined to be stopped and eserine substituted, a proceeding likely to prove hazardous.

* Practical Handbook of the Diseases of the Eye. By D. Chalmers Watson, M.B., C.M., Ophthalmic Surgeon, Marshalls Street Dispensary, Edinburgh. Edinburgh: Wm. F. Clay.

Foreign bodies in the orbit are described as if only occurring after perforating the eyeball. Under Mydriatics no mention is made of scopolamine, perhaps the most valuable substitute when atropine causes irritation. In normal and *Hypermetropic Eyes* the evidence of paralysis of accommodation is "that near vision fails while distant vision remains good," though how this occurs in Hypermetropia is evidently only known to the author. Under the causes of Retinitis diabetes is not given. Under Ophthalmoplegia Externa it is stated no treatment is of any service; if this means that these cases never recover it is certainly not borne out by experience. Under Iridectomy for glaucoma the importance of removing the iris down to its attached periphery is not insisted on; while under operations for congenital cataract it is enjoined to make a "triangular incision" at the corneo-sclerotic margin; and under Tabes Dorsalis the Argyll Robertson pupil is described as one which "reacts to light but not to accommodation," a mistake we should hardly have expected in a former pupil of Dr. Argyll Robertson.

We hope ample time will occur before the next edition is forthcoming, to enable the author to thoroughly revise and correct his work, when it may be at any rate not a means of misleading the student.

HERBAL SIMPLES APPROVED FOR MODERN USES OF CURE.*

It would not be easy to specify the section of the public for whom a book of this kind is written. The fact however of a second edition being published appears to show that the first has been read and found useful by more than a few people. The plan of the book is this:—An alphabetical list of ordinary field and garden plants, fruits, animals, etc., has been made, and under each heading is placed all the traditional information,

* *Herbal Simples Approved for Modern Uses of Cure.* By W. T. Fernie, M.D. Bristol: John Wright and Co. 1897.

folk-lore, and old wife's tales that the author has been able to collect. At the end there is similarly a list of complaints with appended groups of plants, etc., recommended for the treatment of each disorder. There is, as one would naturally expect, a thread of truth running through the book, but the greater part of the medical treatment put forward is based on pure tradition, and as such is misleading and apt to be mischievous. The author is not sufficiently careful to point out that there is a great difference between, on the one hand, a herb or an insect being commonly given for a complaint, and on the other, the recipient being benefited by such administration. Thus, under the heads of "Cancer" and "Syphilis" he gives a list of thirty remedies, and includes amongst them egg-shells, hog-louse, gold dissolved in sea-water, and walnut leaves ; while for cancer of the breast he especially recommends goose-grass, marjoram, and parsley. It is quite easy to imagine what harm could be done in country places by a book like this in the hands of an ignorant herbalist, or old gammer of the "wart charmer" type, or even of the amateur female practitioner acting under the guise of a "lady bountiful" ; for such people, by persuading sick yokels of either sex to waste time in applying and taking messes of all kinds, so often delay all chance of their relief by proper medical treatment until their disorders have reached an incurable stage.

As a record however of the virtues which have been ascribed to common wayside flowers, and a summary of the extraordinary things folks have been in the habit of swallowing or applying externally for the relief of all kinds of ailments, this volume is both amusing and interesting. Many of the anecdotes, quaint sayings, and bits of poetry in connection with flowers and herbs found in country gardens and hedge-rows are distinctly entertaining ; but from a purely medical point of view the book would have been of more value had the wheat and chaff been separated in a more intelligent and intelligible manner.

KING'S COLLEGE HOSPITAL REPORTS.*

THE third volume of the King's College Hospital Reports shows very clearly that the importance of clinical medicine and surgery is still strongly upheld by the teachers at this metropolitan school. The papers contained in this volume are essentially practical, and there are two which strike us as especially good. Dr. Crawford's article on "Graves' Disease, an emotional disorder," is well worth reading. He shows that the complaint is not due to a thyroid toxæmia, but to a condition of the whole nervous system which can perhaps be best expressed by the term chronic fear. Mr. Cheate's paper on the Importance of Bacteriology in Clinical Surgery is also a very suggestive one. He relates several cases of an obscure nature where a correct diagnosis was made between tuberculous, syphilitic, and sarcomatous diseases of joints by means of inoculating guinea-pigs with fluid drawn from the joint cavities.

To old King's men the account of the life and work of Sir George Johnson will prove of special interest, the value of the article being greatly enhanced by the excellent reproduction, as a frontispiece, of a portrait of this great physician. Old students will also be glad to read the account of the new Ophthalmological Theatre which has been built as a memorial to Sir George Johnson at the hospital with which he was so intimately connected for the long period of fifty-seven years.

DIET CHART AND ALIMENTARY INDEX.†

THIS book contains to begin with a short "Alimentary Index," which is intended to suggest the lines on which the diseases most commonly met with should be dieted. For example, diabetic patients are to be fed with "albuminates and fats, meat

* King's College Hospital Reports. Vol. iii (October 1st, 1895, to September 30th, 1896). London: Adlard and Sons. 1897.

† Diet Chart and Alimentary Index. Suggested by M. J. Kenny, L.R.C.P. Ed., L.R.C.S.I., etc. Bristol: John Wright and Co. 1897.

and fish of all kinds, green vegetables, and salads dressed with oil—exclude carbohydrates.” Patients suffering from chronic diarrhoea, with “peptonised milk, raw meat pounded to a pulp,” and so on. The rest of the book consists of a repetition of a printed list of the principal articles of diet, of which the physician is supposed to erase those which he considered unsuitable; the leaf is then to be torn out and given to the patient. On the back are printed instructions for making barley water, beef tea, and six other similar preparations.

WE have received from “The Life Saving Society” a Prospectus and a Handbook of Instruction. The Society’s objects are to stimulate the teaching of the art of swimming and to diffuse a knowledge of the method of saving drowning persons and resuscitating those apparently dead from drowning. It is pleasant to be able heartily to recommend a book written with such a good aim. The small volume is perfectly got up and the drawings are good. The rescue and release drills seem well calculated to prepare the learner for the actual emergency when it occurs; and the short remarks on the physiology of respiration and circulation are clear and sufficient. The meaning of the text is always plain. If any criticism of this little book be permissible, it might be pointed out that a few diagrams giving the relative positions of rescuer and rescued during the process would elucidate the matter, for to the inexperienced reader, for whom after all the book is intended, the description of how the rescuer “carries” the drowning is not quite full enough. It is difficult to see, too, why the approach from behind is not more strongly insisted upon, as this procedure would appear to save risk and time. The handbook is one which every swimmer, who has not had practice in life-saving drill, should read.

New Books, etc., Received.

- Diseases of the Gall Bladder and Bile-ducts. By A. W. MAYO ROBSON, F.R.C.S., Senior Surgeon to the General Infirmary, Leeds, etc. London: Baillière, Tindall and Cox. 1897.
- Practical Muscle Testing and the Treatment of Muscular Atrophies. By W. S. HEDLEY, M.D., Medical Officer in charge of the Electro Therapeutic Department of the London Hospital. Illustrated. London: H. K. Lewis. 1897.
- The Diseases of Women. A Handbook for Students and Practitioners. By J. BLAND SUTTON, F.R.C.S., Surgeon to the Chelsea Hospital for Women. Assistant Surgeon to the Middlesex Hospital; and ARTHUR E. GILES, M.D., F.R.C.S. Ed., Assistant Surgeon, Chelsea Hospital for Women. Illustrated. London: The Rebman Publishing Company Limited. 1897.
- A Handbook of Diseases of the Nose and Pharynx. By JAMES B. BALL, M.D., Physician to the West London Hospital. Third edition. Illustrated. London: Baillière, Tindall and Cox. 1897.
- The Relief and Cure of Spinal Curvatures. By Dr. PERCY G. LEWIS, Honorary Medical Officer to the Victoria Hospital, Folkestone, etc. Illustrated. London: John Bale, Sons, and Danielson Limited. 1897.
- The Mystery and Romance of Alchemy and Pharmacy. By C. J. S. THOMPSON. London: The Scientific Press Limited. 1897.
- The Student's Guide to Medical Diagnosis. By SAMUEL FENWICK, M.D., Consulting Physician to the London Hospital; and W. SOLTAU FENWICK, M.D., Physician to the London Temperance Hospital, etc. London: J. and A. Churchill. 1897.
- Lawson Tait's Perineal Operations, and an Essay on Curettage of the Uterus. By W. J. STEWART MCKAY, M.B., M.Ch., Surgeon to the Lewisham Hospital for Women and Children etc. London: Baillière, Tindall and Cox. 1897.
- Doctor Mendini's Hygienic Guide to Rome. Translated from the Italian and edited, with an additional chapter on Rome as a Health Resort, by JOHN J. EYRE. London: The Scientific Press Limited. 1897.
- Illustrated Handbook for the Rescue, Release from, and Resuscitation of the Drowning. Fourth edition, 1897. London: The Life Saving Society.

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THE
BIRMINGHAM MEDICAL REVIEW.

NOVEMBER, 1897.

ORIGINAL COMMUNICATIONS.

PUBLIC HEALTH PROGRESS
IN THE QUEEN'S REIGN, 1837—1897.

BY T. RIDLEY BAILEY, M.D.,
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OF THE BRITISH MEDICAL ASSOCIATION;
MEDICAL OFFICER OF HEALTH, BILSTON; LATE CHAIRMAN OF THE
VISITING COMMITTEE OF THE WOLVERHAMPTON UNION WORKHOUSE, ETC.

Mr. Ex-President and Gentlemen,

My first duty to-day is to thank you for the great honour you have done me in electing me as your President. When I remember the names of the distinguished men who have preceded me in this chair since the formation of the Society, I am impressed with my own unworthiness and gratefully wonder that one occupying so comparatively unimportant a sphere in the Public Health Service, and with so short a membership of this Branch, should have been chosen with such unanimity.

We have recently celebrated the completion of Sixty years of the reign of our Queen—a reign not only unprecedented in length in our history, but one, the glories of which will be sung as long as England lasts.

It is impossible to realise fully the marvellous changes that have taken place in the Social, Political and Commercial life of our country. Literature, Art and the Drama have accomplished more than the most sanguine of their followers could have dreamt of; Science has surpassed them in her achievements;

and Medicine—both Curative and Preventive—has a history not less worthy of being recorded. I must ask you to pardon my boldness in taking as my subject this afternoon “The Progress in Public Health during Her Majesty’s Reign.” Only a brief and partial sketch is possible within the limits of the occasion and of my own ability.

The state of Sanitation and of Sanitary knowledge throughout the country sixty years ago could hardly have been worse than it was. It is difficult for us to picture now the life and surroundings of the great mass of the people at that time and only by reference to contemporary writings can we hope to know something of them.

In the beginning of this century cholera, which had of course been known for hundreds of years in India, spread through Hindoostan and ravaged nearly the whole of Asia. In 1831 it appeared in Europe reaching England in October. In this country it continued for fourteen months, and on the Continent for six years. Among us it found conditions most favourable to its extension, and nothing can give us a better idea of the entire neglect of even the most elementary sanitary requirements than the description of the state of affairs revealed generally by the enquiries under the “Health of Towns” Movement.

According to Rumsey,* the arrangements for sewage and drainage of towns, and for cleansing the surface of streets, were most defective. Sewers were comparatively rare; such as existed were constructed on wrong principles; and cess-pools were common. House drains were usually wanting and, when present, had no connection with the sewers. The result was that the subsoil of towns was generally studded with sinks and cess-pools; the surface of courts, alleys, etc. was covered with middens and refuse heaps, and the atmosphere laden with impurity and noxious gases.

The drainage of land was rare, and stagnant water and filth, common. The supply of water was deficient in quantity, inferior in quality, and most defective in the methods of its distribution to dwellings.

* *Essays on State Medicine.* By H. W. Rumsey. Churchill. 1856.

Open ditches and foul water-courses laden with impurities existed in the towns and outskirts ; offensive occupations and deposits were to be found on all sides ; factories and workshops, which were erected anyhow and anywhere, were much overcrowded, while ventilation was conspicuous by its absence.

The houses of the poor were usually damp, closely packed in narrow streets and courts, built without regard to style or convenience, the sleeping rooms small and overcrowded, entailing moral and physical degradation. Such structures invited and developed attacks of epidemic disease.

The existing laws were quite inadequate for protection against local nuisances and for the promotion of necessary reforms. No proper authorities were in existence to administer the elementary enactments then in force, to promote a sounder view of public needs and personal habits, or to create and stimulate a desire for a better and a healthier environment.

The local jurisdictions actually in force were inefficient, interfering with, and trespassing upon, each other's functions, and hopelessly preventing the proper execution of sanitary measures.

Medical Officers of Health and Sanitary Inspectors were not even thought of. No central authority had been formed to exercise any control over local and subordinate authorities. Pauperism abounded, no less than 12 or 13 per cent. of the population in 1834 receiving relief from the Poor Rates. It is stated that "before the Poor Law Act of 1834 was passed, throughout four-fifths of England the majority of the inhabitants which had not the advantage of charitable infirmaries or dispensaries were attended under the Parish Medical Contract."*

Only in the year of the Queen's Accession was the Act for the Civil Registration of Deaths, Births, and Marriages, passed—an Act that was a necessary preliminary to the proper study of the etiology of disease, for the classification of the various causes of death in different localities, and for the determination of the influence of sex, age, and conditions of life on the Public Health ; an Act which it is needless to say has been of the

* *Ibid.* Page 154.

greatest possible service in the development of Preventive Medicine.

Before that time, though the country had been frequently overrun with every kind of pestilence—Typhus Fever, Smallpox, Cholera, Scarlet Fever, and the like—no registration of the causes of death had been instituted. Indeed, it was largely owing to the frightful mortality of the Cholera in 1831—when 50,00 lives were known to have been sacrificed, though probably that figure was exceeded by many thousands—that a basis of future enquiry was provided by a careful collection of statistics. We see the result in the series of brilliant achievements in the prevention of disease that are among the greatest glories of this reign.

After this, a comparison could be made, *inter alia*, between the death rate in different parts of the country, and on a “further examination of the difference in the general death rates of towns and country districts, it was found that whereas the annual mortality per cent. of population was 1.8 in country districts it was as high as 2.6 in town districts. In 1841 the Registrar General pointed out that, whereas the mean duration of life in Surrey was 45 years, it was not more than 37 in the metropolis and only 26 in Liverpool. Pulmonary consumption was also now ascertained to be one of the diseases which exhibited a striking excess in the case of town life. In fact the general mortality was found to be increased 44 per cent. by the then condition of English towns and cities, and much that led to this excess of death was rightly held to be capable of remedy.”*

CHOLERA.

The history of Cholera is most intimately associated with the record of sanitary medicine in this country. On four occasions this disease has invaded our shores, causing an enormous number of deaths and leaving misery and despair on every side. The first visitation was in 1831-2, and though this does not

* The Progress of Preventive Medicine in the Victorian Era. R. Thorne Thorne. Page 4.

strictly speaking, come within the scope of my subject, the town in which I now reside suffered to such a frightful extent that a few remarks may be of interest and serve to show the sanitary conditions at the commencement of the period under review.

In Bilston, with a population at that time of 14,492, there were in seven weeks no less than 3,568 cases and 742 deaths, including two medical men. "The sanitary condition of the town," to quote the words of a local writer,* "was deplorable. Foulness and filth were seen in the old-fashioned streets, in the low courts, and everywhere. Stagnant pools sent up their deadly vapours, sink holes their effluvia, and wretched hovels their thrice-breathed atmosphere. Undoubtedly the chief cause of this state of things arose from the character of the people, who, brought together in great numbers by the demand for labour in the vast mines and forges of the town, were composed of the worst characters, morally and socially, that could possibly be conceived; similar to the hordes of animated life that stream into some newly-found gold region. Being of degraded habits, and the houses numerically inadequate for the people's accommodation, they herded together like swine, the filth of their tenements and their persons thus giving strength to the venom of the avenger." It is added that "the cost of the funerals of the victims would have permanently drained, sewered, and watered every house that was visited; that policy and pity cried aloud for street and tenement reform, and demanded the opening of those large 'brick graves' called courts, alleys, and back squares, where the poor are buried alive, amid the gloom, damp, corruption, human scoria, and every other attribute of the churchyard, except its sanctity and peace." This epidemic was also extremely fatal in many other parts of the country, Glasgow, for instance, showing a mortality of 2,842, or 140 per 10,000 of the population.

It was natural that the pestilence passing over the whole land should stimulate observers to discover, if possible, its cause or causes. It was observed that in England, at least, isolated out-

* History of Bilston. G. T. Lawley. Page 193.

breaks occurred in the autumn of the first year, that the disease died out in winter and reappeared with great virulence in the spring or early summer. From this it was concluded that high temperature favoured, while cold retarded, the appearance of the disease. Further, it was known that it was always imported by persons coming direct from infected places, local outbreaks occurring in the seaport towns where they landed, and that it subsequently followed the line of traffic, showing that human intercourse was largely concerned in its propagation.

This disease appeared for the second time in England in September, 1848. From that date until the end of March, 1849, only 988 deaths were registered, but in the summer following there was a rapid increase. During the year 1849 there were in all 53,000 deaths from cholera, besides nearly 20,000 from diarrhoea. The result was that there were no less than three official enquiries instituted. The report issued by the Board of Sanitary Works contained an interesting account of the progress of the epidemic from the East, and showed that the disease generally followed, as we have said, great lines of human communication by land and sea.

The second enquiry resulted in Dr. Farr's report to the Registrar-General—one of our English medical classics. In this brilliant paper, by the use of historical and typographical illustrations, the importance of the sites of towns and the effect of various degrees of elevation on the health of communities is clearly demonstrated. The statistics of cholera in London supported Dr. Farr's hypothesis that the number of deaths varied inversely according to the altitude of the localities.

The third enquiry, by the College of Physicians, derives its value chiefly from the researches of Dr. Baly. Among other things Dr. Baly insisted on the relation of the disease to density of population. "He found that in the 134 more thickly inhabited registration districts of England where the higher rate of mortality occurred, the population being 915 to the square mile, the deaths averaged 65 to 10,000 living. In the 404 districts of lower cholera mortality, there were on the whole 235

inhabitants to the square mile, and the deaths averaged only 7 in the 10,000, while there were no deaths from cholera in the remaining 85 districts, where only 122 persons on the average resided on a square mile.”*

In the August of 1853 cholera again showed itself in London and the North, and in the following year England had its third great visitation, the disease having come directly from the German Baltic ports. By the end of the year over 20,000 deaths in England and Wales were registered, in addition to a very large mortality from diarrhoea.

To Dr. Snow belongs the credit of first making the discovery that the cholera poison was contained in the evacuations, that the disease was propagated by the entrance of small quantities of such evacuations, mostly through contaminated water, into the alimentary canal. At the period referred to, all the sewers of London were discharged into the river Thames, from which the water for drinking purposes was taken by two companies—the Southwark and the Lambeth—and naturally cholera prevailed extensively among their customers. Between 1849 and 1854, however, one company—the Lambeth company—had removed its intake further up the river, thus improving considerably the quality of its water. The result was most significant and instructive. Not only did the disease pick out, as it were, the various streets supplied by the Southwark company, but Dr. Snow was enabled, after careful examination, to emphasise the difference by the following figures :—

	<i>Population in 1851.</i>	<i>Cholera Deaths in 14 weeks.</i>	<i>Cholera Deaths per 10,000</i>
Houses supplied by Southwark Co.	266,516	4093	153
Houses supplied by Lambeth Co.	173,748	461	26

The well-known outbreak in connection with the pump in Broad street, Golden square, need only be mentioned.

“There had been a few cases in the neighbourhood during the month of August, which up to the 30th had resulted in nine deaths. On the 30th at least eight cases. which ultimately

proved fatal, occurred, on the 31st, fifty-six; on Sept. 1st, 143; on the 2nd, 116; on the 3rd, fifty-four; and then daily until the 9th, forty-six, thirty-six, twenty, twenty-eight, twelve, eleven; after which the disease rapidly disappeared.

"No less than 616 persons were ascertained to have been attacked fatally with cholera within this area, between August 19th and Sept. 30th, of whom at least 415 contracted the disease between August 31st and Sept. 4th inclusive.* At this very time, too, the disease did not affect several groups of people living in the same district who had their water from a different supply, and there can be not "the shadow of a doubt that this sudden and evanescent outbreak was distinctly due to the use of the sewage contaminated water of the Broad street Pump, occupying the centre of the affected area, the water of which was held in great repute, and was largely drunk by those who lived in its neighbourhood."

These and similar investigations clearly showed the cause of cholera in a large number of instances, but it was reserved for Thiersch, Sanderson, and others to show by experiments that the poison of cholera—which we now know to be a bacillus—is contained in the alvine discharges and infest the mucous membrane of the bowels.

"It was ascertained that when, under certain conditions, mice were fed with cholera evacuations, they were attacked with symptoms that proved rapidly fatal, and that both symptoms and *post-mortem* appearance had a very close resemblance to those which indicate human cholera.

"The chief points of likeness consisted in the rapidity and intensity of the disease; in a remarkable lowering of the temperature; in the accumulation in the intestines of thin fluid containing bacteria, other lowly organisms, and abundance of shed epithelia, and in the discharge of loose stools from the anus. The method adopted by Dr. Sanderson to infect the mice was to soak pieces of filter paper in fresh cholera evacuations, or in the contents of the bowels of patients who had died of cholera, to

* Bristowe's Theory and Practice of Medicine. Fourth Edition, p. 229.

dry them, to ascertain by weighing the quantity of solid matter thus added to them, to cut them into pieces one inch square, to soak them in bacon fat, and then to administer them to the mice. The mice under these circumstances ate them greedily. The consequences were—that of mice fed with paper prepared from evacuations which had not been allowed to stand more than twenty-four hours, that is on the first day after passing, eleven per cent. were affected, that of those fed with paper prepared on the second day, 36 per cent.; that of those fed with paper prepared on the third day, every one; that of those fed with paper prepared on the fourth day, 71 per cent., and that of those fed with paper prepared on the fifth day, 40 per cent. Paper prepared subsequently had no effect. These experiments show—that the cholera evacuations have little or no intensity of action when perfectly fresh; that their virulence increases up to the third day, diminishing during the fourth and fifth days, and that they lose all specific properties after that date.

“The evacuations from the diseased mice produced the same effects on healthy mice as did true cholera evacuations; and further, all experiments made by Dr. Sanderson in the month of November failed absolutely, probably, as he suggests, on account of the low temperature then prevailing.”*

In 1866—the year of the fourth Cholera Epidemic—the water contamination theory received strong confirmation in the East of London, where the localisation of the epidemic was almost entirely due to the distribution to these districts of impure and unfiltered water by the East London Water Company. At the same time, further research, both at home and abroad, clearly showed that the laws influencing the incidence of Cholera were very similar to those influencing Typhoid Fever, and that, in the words of Simon, “excrement sodden earth, excrement reeking air, excrement tainted water, are for us the causes of cholera.” This epidemic was much less fatal than the previous ones, as a result no doubt of the partial removal of those conditions of filth which were known to be the essentials in the spread of cholera.

* *Ibid.*

The mortality of the disease in the three epidemics is given by Sir R. Thorne Thorne as follows :—

CHOLERA MORTALITY.

	ENGLAND AND WALES.			LONDON.	
	<i>Total Deaths.</i>	<i>Deaths per 10,000 living.</i>		<i>Total Deaths.</i>	<i>Deaths per 10,000 living.</i>
1849.	53,293	30	...	13,565	51
1854.	20,097	11	...	10,684	43
1866.	14,378	7	...	5,548	18

As a result of the experience and discoveries of the last sixty years we have now no fear of cholera. If it should appear again on our shores—as indeed it has done more than once since 1866—our knowledge of its causes and the conditions of its propagation will enable us to prevent it spreading widely in the country.

In concluding this part of my theme I will quote the words of Sir R. Thorne Thorne in condemnation of the antiquated system of dealing with the disease by quarantine, which, to the credit and advantage of this country, has now been abandoned.

“The system of quarantine has again and again shown itself to be impotent for good, and, being so, its vexatious and inhuman characteristics stand out the more prominently. Above all, it has a blighting effect on sanitary progress. So long as governments tell their peoples that a line shall be drawn around them across which disease shall not pass, so long will those peoples be reluctant to spend their money on the promotion of true measures of prevention. The quarantining countries are essentially those which cholera invades. Taken as a group they are those where true sanitary progress is at the lowest ebb; and, with the experience we have before us, I would in conclusion ask, much in the words I used at the Rome Conference—Is it likely that this nation will sacrifice her well-tried system of prevention for a restriction of five days’ quarantine.”

SMALLPOX AND VACCINATION.

The fascinating story of the life of Jenner and the discovery of vaccination has been recently retold in connection with the

Jenner centenary, and the report of the Royal Commission has drawn further attention to the subject. On the 14th of May, 1796, Jenner performed his first vaccinations on the human subject, but it was not until 1840 that the first Vaccination Act was passed by which every person could claim to be vaccinated at the public cost. In 1853 the operation was made compulsory on all infants above three months old. Only in 1871 were Boards of Guardians compelled to appoint Public Vaccinators. "Vaccination duly and efficiently performed," says Jenner, "will protect the constitution from subsequent attacks of smallpox as much as the disease itself will. I never expected that it would do more, and it will not, I believe, do less." That vaccination affords protection from smallpox, and that the prevalence of the mortality from the disease has in consequence marvellously decreased, admits of no reasonable doubt. The diminution of smallpox is well stated by Sir R. Thorne Thorne:—"During the period 1838-42, towards the end of which the advantages of the Act of 1840 were in operation, the rate of mortality from smallpox in England and Wales was 57·2 per 100,000 living, by the end of 1849 it had fallen to 29·7, and during the period 1850-54 to 27·4. It was at this time that the Vaccination Act of 1853 came into operation. That Act embodied the principle of making vaccination compulsory on all infants within a few months of birth—a new departure which has so largely contributed to the prevention of death from a loathsome disease. During the course of the next three quinquennial periods the smallpox rate fell further to 19·8, 19·0, and 14·4 per 100,000 respectively, the latter portion of the last period, viz., that for 1865-9, being in part influenced by the operation of the provisions embodied in the comprehensive Act of 1867." In the epidemic of 1870-72, however, the mortality increased largely, the rate for the five years 1870-74 rising to 42·7 per 100,000, and though this again decreased to 8·3 in the years 1875-9 and to 6·5 for 1880-84, it was obvious that the subject had not been fully understood and that there were other considerations requiring recognition. It was found

that a large proportion of the deaths in the epidemic of 1870-72 occurred in persons over 15 years of age who had been insufficiently vaccinated in infancy, and as a result of the most careful investigation it is now known (1) that the lymph to be used must be carefully selected, (2) that the operation must be of a recognised minimum standard, (3) that the protection is frequently limited to a term of years, (4) that consequently re-vaccination is necessary about the period of puberty, and (5) that even when an insufficient vaccination does not give complete immunity it greatly reduces the virulence and fatality of the disease. This is clearly proved by Mr. Marson's experience at the Smallpox Hospital during 20 years. He states that of persons admitted with smallpox—

	<i>Number admitted.</i>	<i>Mortality per cent.</i>
1. Having one vaccine cicatrix	2,001	7.73
2. Having two vaccine cicatrices	1,446	4.70
3. Having three vaccine cicatrices	518	1.95
4. Having four or more vaccine cicatrices	544	0.55
5. Stated to have been vaccinated but having no cicatrix	370	23.57

Again, during the last half of the 18th century, smallpox caused 96 out of every 1,000 deaths from all causes (and in years when epidemics prevailed this number was sometimes nearly doubled) and now, from the year 1853—the year of compulsory vaccination—to the present time the proportion is only 10 per 1,000. This reduction, however, is confined entirely to very young children, the death rate in children under 5 years of age having fallen 80 per cent., while it has actually increased largely in persons over 15 years. Of course it is easy to understand that compulsory infantile vaccination has prevented the deaths from smallpox of a very large number of children and has reduced the death rate from this disease at all ages. After the age of 15, when the protecting influence has largely disappeared, unprotected adults form a larger proportion of the community than in the earlier periods when an attack of smallpox was much more frequent.

Not only have the frequency of epidemics, and the severity and fatality of the disease, been much diminished, but the researches of Dr. Collie into the cases treated in the London Smallpox Hospitals in the two epidemic years, 1871 and 1881, also show clearly (*a*) the larger proportion of severe cases amongst the unvaccinated, and (*b*) the need of re-vaccination about the age of 15.

Dr. Collie found that, whilst the mortality per cent. of cases is practically identical in the unvaccinated, whether above or below the age of 15 years, viz., 37 or 38, the mortality in the vaccinated below 15 years did not depend so much on the number and character of the scars as it did in persons above that age. Dr. Herbert Goude, Medical Officer of the Highgate Smallpox Hospital, said in 1893 in reference to his institution, where the attendants are all re-vaccinated, "we have now an unbroken record of fifty-eight years, during which, no nurse or servant has contracted the disease even in a modified form, and this too, though the nurses and attendants have on many occasions accidentally inoculated themselves with variolous matter, thus putting the protection afforded by vaccination to a really crucial test. We have had no injurious effects from re-vaccination beyond those apparently inseparable from the operation, such as malaise and occasionally tardy healing of the vesicles."

The comparative immunity of the vaccinated from attacks of smallpox, and from death if attacked, has been further confirmed by the experience of the City (Birmingham) in which we are now assembled. Its Medical Officer of Health, Dr. Alfred Hill, a distinguished Past President of this Society, in commenting on the smallpox epidemic of 1893-95, after giving various figures in support of his position, sums up as follows:—"The experience of Birmingham, therefore, shows that vaccination confers almost absolute immunity from an attack of smallpox for the first five years and practical immunity for the first ten years."

Furthermore, "It appears that for 10 years after its performance, vaccination conferred absolute immunity from death from smallpox, although amongst the unvaccinated of all ages,

the disease had a mortality of over 30 per cent., that is to say, by means of vaccination within 10 years from the time of an outbreak the deaths of 30 per cent. of the persons attacked may be prevented.*

In Prussia, vaccination and re-vaccination were made compulsory in 1874, since which time the death rate from smallpox has been reduced to one-tenth of what it was before (0.24 to .02 per 1000), and it is stated that in the Prussian Army no death from smallpox has occurred since 1874.

It is quite true that, while they admit that smallpox has wonderfully diminished in frequency and severity, the opponents of vaccination assert that this is chiefly, if not entirely, due to isolation and to improved sanitation. This is a point that would have had to be dealt with had it not been for the excellent paper on the subject in *Public Health* by Dr. McVail, who takes his facts from that most admirable book by Dr. James B. Russell, "The Evolution of the Function of Public Health Administration." Dr. McVail, from the history of Glasgow during this century, shows "that the difference in the smallpox deathrate of Glasgow, before and after the introduction of vaccination, simply represented the amount of vaccination practised in the city. Vaccination was a *vera causa*, and the only *vera causa* of the diminution of smallpox." He states what has frequently been proved by others, that "the lesson of greatest interest is, that in spite of insanitary conditions, which are hardly conceivable now-a-days, the Jennerian prophylactic had the same power to protect against smallpox that it has been shown to possess under all other varying circumstances and conditions, even in the case of those whose lives at the present time are spent in the wards of Smallpox Hospitals, in an atmosphere possibly still more abounding in the poison of the disease than were even the most crowded parts of Glasgow during smallpox epidemics a hundred years ago."†

Again: a writer in the *British Medical Journal*,‡ in reviewing

* Dr. Hill's Report for 1893.

† Vaccination and Sanitation. J. C. McVail, M.D. Vol. viii, *Public Health*, No. 8, p. 266.

‡ A Century of Vaccination. *B. M. J.*, 1896, No. 1847, p. 1265.

the progress of vaccination in this and other countries along with the concomitant alterations in the mortality from smallpox states, "that we can say with confidence what the vaccination law is in any country, from a mere inspection of the smallpox mortality for some years;" and further, that "it cannot possibly be improved sanitation that has caused the remarkable changes in the mean deathrates for more than one reason. Compare Prussia with Austria—there is a sudden and striking change in the deathrate of Prussia in the period succeeding the law of 1874. Now Austria shows no such change in the deathrate, and Austria is still without compulsory vaccination, while Austria has participated in the sanitary improvements of the age. And, on the other hand, Prussia did not suddenly jump into an ideal sanitary condition between 1870 and 1880. But further, the reduction in smallpox mortality has not affected all ages alike, whereas an improved sanitation does affect all ages alike."

In concluding this portion of my subject I need not make more than a passing allusion to the Report of the Royal Commission on Vaccination, as it has already been so ably and so frequently discussed in the press and by the members of this society. It is satisfactory to note that, in the report, vaccination is recognised as the preventative of smallpox; that the importance of revaccination is insisted upon not later than at the age of twelve years; and that the Commissioners are not prepared to recommend that the State should cease to require vaccination and trust entirely to a voluntary adoption of the practice. To further this end, and to promote vaccination, it is suggested that every medical man should be a public vaccinator, paid by the State, and subject consequently to official inspection in order to prevent abuse and to procure a minimum standard of efficiency.

TYPHUS FEVER.

Until the year 1869 typhus, typhoid, and simple continued fevers were included in the Registrar-General's returns under the one heading "Fever." Long before that time, however, it had been recognised that this term embraced different

diseases which had been previously regarded as merely stages of the same affection.

In 1840 the late Dr. A. P. Stewart pointed out, in the *Edinburgh Medical and Surgical Journal*, the chief characteristics of typhus and typhoid fever, and showed that not only the symptoms but also the method of propagation, the class of persons mostly affected, the duration of the attack, and the mortality were quite distinct.

These differences were not generally admitted till 1850, when Sir William Jenner, as a result of his enquiries, showed that the etiology of the one was not that of the other, that the two diseases only rarely prevailed together, and that the one did not communicate the other.

The importance of this discovery cannot be overestimated. It is most essential, in preventive as in curative, medicine that the correct diagnosis and the exact cause of every disease, but more particularly the contagia, should be definitely known in order that the proper steps may be taken to prevent their spread.

From 1870 the deaths from "Fever," therefore, have been classified under the headings typhus, typhoid, and simple continued fever, but before that time no distinction is possible. Typhus fever or the old putrid, jail or hospital fever, is eminently infectious and, as is now well known, is associated with overcrowding, dirt, want of light and air, and destitution.

In 1837, the disease prevailed in many parts of England, and in 1838 no less than 1,271 per million of the population died of it. In the years 1846-48 a frightful epidemic occurred in Ireland on the failure of the potato crop. It spread to England, where, in 1848, 786 cases were admitted into the London Fever Hospital alone. In that hospital as many as 14,589 cases were treated during the period 1862-70. In Glasgow too, the death rate per million for the five years 1855-59 was 1,265, and for the five years 1860-64, 1,576.

These figures show the extremely fatal character of this most formidable disease. Since 1869, this fatality has markedly and

continuously decreased until now it has almost reached the vanishing point.

In that year the deaths in England and Wales were 4,281, in 1885 they were only 318, and the mean rate for the quinquennium 1891-95 had actually been reduced to 4 per million of persons living. In Glasgow, too, to quote Dr. Russell,* "we begin with 3,607 deaths from typhus in five years (1865-69), of which 50 per cent. took place in hospital; we end with 70 in five years (1890-94) of which 94 per cent. took place in hospital. In other words, whereas in 1865, 610 beds were kept full of typhus, and yet more than one half of the total cases were allowed to run their pernicious course at home, for many years now, two wards of 15 beds each, or 30 beds in all, have sufficed to receive all the cases known to exist in Glasgow.

In fact they are often empty for weeks, and they are never full. This is an example of the attainment of theoretical perfection in isolation—the largest proportion isolated of the smallest quantity of disease existing. This result is not wholly due to the persistent enforcement of isolation. Typhus is peculiar in that its infectivity may by change of environment, be weakened almost to extinction. Cleanliness and fresh air make it comparatively harmless. The deadliest blow struck at typhus in Glasgow was the suppression of overcrowding."

Surely if sanitarians could lay claim to no other achievement, they would be entitled by this to an honourable place in the history of the Victorian era, for no one can fully estimate the saving to the community alone by such a record. The causes of typhus were the evil conditions in which the great mass of the people lived and were housed in the earlier part of the century—conditions that are not yet fully remedied in many of our large towns and manufacturing districts—crowded areas, narrow courts, close, stuffy houses, where light and air, wholesome water, through ventilation, and proper drainage were impossible. In such places it took up its abode as a permanent

* The Evolution of the Functions of Public Health Administration. J. B. Russell, B.A., M.D. Page 64.

resident. The history of London and other large towns furnishes ghastly illustrations relieved by efforts after amelioration, as, *e.g.*, the formation of great open roads, cut right through, so that at least a current of fresh air and a fair amount of light might follow. Sir R. Thorne Thorne says "that between 1856 and 1887 a sum of over fourteen millions sterling has been devoted by the Metropolitan Board of Works to measures tending almost exclusively to the destruction of unwholesome property and to the opening up of wide thoroughfares and breathing spaces in the crowded parts of the Metropolis; and this sum does not include over two millions spent on the Thames Embankments; neither does it take any account of outlay in the erection of wholesome dwellings to replace unwholesome ones—this latter work having been almost altogether undertaken by bodies and individuals having no access to the public purse. Thus, the company of which Sir Sydney Waterlow is chairman has, during the past twenty-five years, provided model dwellings for 25,000 persons; some £440,000 has been spent within the City precincts in artizans' and labourers' dwellings, and such bodies as the Artizans' and Labourers' and General Dwellings Company and the Peabody Trustees have laboured in the same direction. Indeed, an intimate relation must be admitted to exist between these efforts and the disappearance of London typhus." Similar results, following upon similar actions, have been obtained in other places, such as Liverpool and Glasgow, where the expenditure of large sums of money in the removal of crowded unhealthy areas has caused the disappearance of typhus, with incalculable benefit to the community in the prevention of unnecessary suffering and the saving of valuable lives.

Back-to-back houses, it must be admitted with regret, still exist. It is interesting to note that so long ago as 1849 Sir John (then Mr.) Simon, in connection with the disease under consideration, strongly condemned them. It would seem desirable that the adoption of the Model Bye Laws of the Local Government Board, by which it is provided that dwellings

shall have a minimum space both front and back, should be compulsory throughout the country.

The experiences I have related not only justify but imperatively demand that Local Authorities should make any outlay that may be necessary for the abolition of crowded areas, and of those "Blind Houses" which violate the first principles of Hygiene. In prosecuting such work as well as in the provision of free baths and wash houses, and in the inculcation of more decent views of personal and domestic cleanliness, Sanitary Authorities would find ample scope for their energies. They will have their reward not only in adding to the sum of human happiness, but in the improved health and higher moral tone of the people. The words of Dr. Russell are very encouraging. "The practice of free washing of clothes wherever dirt is found in presence of any infectious disease and the steady enforcement of household cleanliness at all times, as well as the facilities afforded by an ample water supply and baths and wash-house have raised the standard of domestic cleanliness in the poorest parts of Glasgow to an extent which only those who remember their former state can appreciate."

TYPHOID FEVER

This gratifying record of the gradual disappearance of Typhus Fever—due partly to its differentiation from Typhoid—is almost paralleled in the history of the latter disease. When once the fact was recognised that Typhoid or Enteric Fever was essentially "The fever of fæcal decomposition" the way was open for its prevention by rendering it impossible that the poison from the excreta of a victim should reach others through either the water supply or milk or other food, or air.

In 1869, the first year in which, as already stated, the returns of the two diseases were separately recorded, 13,967 deaths in England and Wales were registered from Enteric and simple continued fever, while in the quinquennium 1876-80 the average yearly number was 8,657, and in the years 1881-5 only 6,671. Or to give the result in another form, in 1869, the death rate

from Enteric Fever was 0·39 per 1,000; in the decade 1871-80 the annual mortality was 0·32 per 1,000 living at all ages; in 1888 it was 0·17 and in 1896 it was the same.

In 1866 was issued the famous report by the late Dr. Buchanan on the improvement to the public health of certain communities, following on a purer water supply, and a better system of sewerage, and the consequent abolition of Cesspools.

Dr. Buchanan* examined the deathrates from all causes, and particularly from certain diseases, in twenty-five towns, before and after the introduction of these sanitary measures. The result was an average reduction of 10·5 per cent. in the general deathrate in nineteen towns, but the decrease was specially marked in the mortality from enteric fever. In twenty-one towns there was an average decrease of 45 per cent. in the deaths from this disease.

For instance, the annual mortality from enteric fever for every 10,000 persons living, at Merthyr Tydfil, fell from 21 to less than 9; at Croydon from 15 to 5·5; and at Penrith from 10 to 4·5. This experience has been confirmed in some Continental towns. In Hamburg, out of every thousand deaths, the rate for enteric fever has fallen from 48·5 to 10·5; in Dantzic from 26·6 to 2·3, while in Frankfort, the deaths from the same cause have fallen from 9 to 2 per 10,000 of the population.

Pettenkofer propounded the view that there was a distinct, if not causal, relationship between enteric fever mortality and the changes in the moisture of the soil from the rise and fall of the ground water. Buchanan, however, while admitting the possibility of an indirect connection, believed the true cause of the increase to be impurity of the drinking water; and there is no doubt, as Baldwin Latham has shown, that it is not the ground water itself that is the cause of the disease, but the impurities in the soil set in action by its varying level. During the last forty years various reports, with which you are all familiar, by Inspectors of the Local Government Board and others, have proved conclusively that epidemics of this disease have been due to a

* Ninth Report of the Medical Officers to the Privy Council.

contaminated milk, or water supply. Cream too, has been known to convey it, and even freezing does not destroy the bacillus, for ice and iced creams have also served as the media for infection.

It is also stated that typhoid can be transmitted to man by the milk of cows suffering from a corresponding disease; and there can be no reasonable doubt that the virus may occasionally be conveyed through the air. Recent enquiries too have shown that oysters and other shellfish may be impregnated with the poison and so become dangerous to man. An extremely interesting example of this came under my own notice some months ago, of which I gave an account in my last Annual Report, and which is quoted in this month's *Public Health*.

It is probable that, as in cholera, the specific poison of enteric fever has not its maximum virulence when first passed from the body, and it is astonishing how small a quantity is sufficient to produce an epidemic. Sir R. Thorne Thorne and Dr. Buchanan have shown that in the Caterham Valley outbreak from polluted water (in 1879) "an amount of specifically polluting matter, so infinitesimal in quantity as to be altogether beyond detection by chemical analysis, was fully potent for mischief." It is well however for us and the public to remember the words of Dr. Russell in discussing so ably this question in relation to Glasgow—"While we ascribe so large a share in the reduced fatality of enteric fever to the prevention of milk epidemics, these are after all what may be designated acute events arising from passing causes. The chronic causes of enteric fever, those which sustain it as an endemic, are the daily crop of nuisances essentially related to excrement removal which spring up within and about the house, which it is a great part of the business of the Nuisance Inspector to abolish from day to day; and defects in the cleansing and scavenging of ashpits, courts, and closets, for which the Cleansing Department is responsible. The plodding work of the Sanitary Department and the intelligently developed system of cleansing, which has already been commended, therefore deserve their share in the

allocation of merit." The figures given in support of this statement are most instructive:—The deathrate per million from Enteric Fever was—for the 10 years 1865-74, 481·3; for the 10 years 1875-84, 417·4; for the 10 years 1885-94, 193·4; and in Dr. Russell's tables the following are the brief but most significant notes added:—

- 1865. First Municipal Fever Hospital.
- 1868. Cleansing Department organised.
- 1870. Sanitary Department organised.
- 1885. Systematic Drain Testing and Special Summer Cleansing begun.
- 1889. Privy system condemned.
- 1890. Notification Act adopted.

Of *Simple Continued Fever* it is only necessary to state that as a cause of death it exhibits a corresponding decrease. While in 1869 the rate was 0·24 per 1,000, in 1888 it was 0·015. This is no doubt due largely to improved diagnosis, and I confess that—as a disease distinct from Typhus, Typhoid or Relapsing Fever, I do not know what constitutes continued Fever. In the New Nomenclature of the Royal College of Physicians (1896 Edition), it is given simply as "Febricula," which surely is only a symptom, and I agree with Dr. Berry* of Wigan, that the name should be removed from the schedule of Fevers under the Infectious Diseases Notification Act (1888).

REDUCTION IN THE GENERAL AND ZYMOTIC DEATH RATE.

Having now glanced at the progress made in certain departments of Sanitary Science during the Queen's reign, it is a natural step onward to examine the results as seen in the reduction of the general death rate and the mortality from Zymotic Causes. A very instructive and interesting paper appeared in *Public Health* for June last,† giving a comparison of the number and the causes of some of the deaths in England and Wales for

* Continued Fever, What is it? G. W. Berry. *Public Health*. Vol. ix., 1897. Page 283.

† A Retrospect, 1838-42, 1891-95 *Public Health*, June 1897. Page 289.

the two periods 1838-42 and 1891-95, as found in the Annual Reports of the Registrar General, from which most of the figures which follow are taken.

First, let me note that the population at the census of 1841, was very nearly 16 millions (15,927,867), and at the census of 1891, it had increased to just over 29 millions (29,002,525).

In the first quinquennium (1838-42), the mean mortality from all causes was 22,071 per million living, while in the last quinquennium it had fallen to 18,738 per million, or a decrease of 15·2 per cent. of the mean rate. In other words instead of the 2,785,931 deaths registered in the last named period there would, if the old rate had continued, and with the increased population, have been 3,280,850 or 495,459 more than the actual record, giving an average yearly saving of 99'091 lives.

The significance of this statement is even increased when we enter a little into detail and realise that more than half of this saving is due to the reductions from Zymotic—which are preventible—diseases.

The following are the averages of these diseases as given by the Registrar General in his annual report for 1895:—

ENGLAND AND WALES.			
<i>Rate per million living.</i>	<i>Quinquennium</i>	<i>Change in rate, per cent of rate 1838-42</i>	
Smallpox	576	29	—95'0
Chicken Pox }			
Measles	539	408	—24'4
Scarlet Fever	797	435	—45'6
Diphtheria }			
Whooping Cough	504	398	—21'1
"Fever"	1,053	185	—82'5
Diarrhœa	254	630	+148—0
Dysentery }			
Cholera	44	21	—52'3

The greatest decrease is seen in the rate from Smallpox, Fever (Typhus, Enteric and Simple continued) and Cholera, and these have already been discussed.

The mortality from Scarlet Fever and Diphtheria combined shews a deduction of 45·6 per cent, but the deaths from Scarlet Fever alone indicate a still greater reduction. In the decennial period 1851-61 the deaths from this disease were 88 per 100,000 of the population, and, notwithstanding fluctuations, there has

been a steady, continuous diminution, until at present the average is only 17 or 18 per 100,000, or less than a quarter of what it was forty years ago. This reduction is due to several causes, (1) to the more thorough isolation of the sick and the destruction or disinfection of fomites, (2) to our increased knowledge of its etiology, whereby we are able to recognize the possibility of infection through milk—sometimes by direct contamination, e.g., from persons in the dairy who suffer from the disease, or, as has been demonstrated by Power, Klein, and others, from a corresponding disease in Cows, ("Hendon Cow disease") and (3) to a more accurate means of Diagnosis whereby cases formerly recorded as Scarlet Fever would now be recognized as Diphtheria.

On the other hand, the increase in diphtheria has been very marked, not only in the number of cases but also in fatality.

In the five years 1859-63 the deaths from diphtheria were 95 per million, whereas in the similar period 1891-95 they were 253. Various theories have been suggested in explanation of this very serious result, but time will not allow me even to mention them. It must suffice to state that our improved knowledge of its causation and methods of spread, while still obscure, justify us in the hope that it will soon be possible for us to bring it, as we are bringing the other infectious diseases, under the control of sanitation.

The following table, taken from the paper already mentioned, will show at a glance the saving of life resulting solely from the diminutions which have taken place in the mortalities from the zymotic diseases during the five years referred to, and will be far more eloquent than any words of mine:—

		<i>Deaths in five years 1891-95.</i>		<i>Gain or loss of lives.</i>	
		<i>Recorded.</i>	<i>"Old Time's" rate.</i>	<i>Five years.</i>	<i>Annually.</i>
Smallpox	{	3,515	85,622	+82,107	+16,421
Chickenpox					
Measles		60,584	80,122	+19,528	+3,905
Scarlet Fever	{	64,846	119,471	+54,625	+10,925
Diphtheria					
Whooping Cough		59,142	74,920	+15,778	+3,155
"Fever"		27,546	156,528	+128,982	+25,790
Diarrhoea	{	93,986	37,757	-56,229	-11,245
Dysentery					
Cholera	{	3,188	6,540	+3,352	+670

Mean population 1891-95, 29,732,504.

In this brief and most imperfect survey of public health progress during the past sixty years, no mention has been made of phthisis, puerperal fever, of diarrhoea, and of other diseases which require consideration, nor has anything been said of the evolution of sanitary laws and the extension of local government, of the improvement of our food supply and the more systematic examination of meat, fish, and other articles of diet; of the endeavours made to discover and prevent the spread of tuberculosis from the consumption of the flesh of infected animals; of the whole subject of bacteriological research and the development of the idea of inoculation for the prevention or modification of disease, and of the marvellous advances, too, in the hygiene of the Army and the Navy. Time will not allow of more than the bare enumeration of these matters, each of which might be made the subject of an extensive and interesting paper.

From the story of the past, however, we have every cause for congratulation and thankfulness. In the midst of great difficulties the men who were the pioneers of sanitary medicine raised it to a science, and from the history of their doings we may gather inspiration for further endeavour. It is the high privilege of sanitarians to be the leaders of the nation in social questions of the highest importance, and adequately to perform their duty they should be secure in the tenure of their office, receive a due appreciation of their position, a fair salary and complete independence of local control. It is of the essence of their calling to teach statesmen and the other leaders of thought in the country the medico-physiological view of every matter, whether physical or moral, that affects the health of the people. It is our duty to say that every man should have the opportunity to earn a minimum living wage, and, conversely, that no man should be kept by the State who is strong and skilful enough to keep himself; that sweating in any trade and preventible accidents are detrimental not only to individuals but to the general interests of the community, and should not be allowed; that unhealthy trades

should be further regulated by the State and their ill effects counteracted ; that the reform of our workhouses and prisons, and an improvement in their administration, is but a necessary obligation of our civilization. Every locality, too, should be provided with suitable healthy dwellings for the Artizan Classes, let at such rents as the wages of the district will fairly cover, and where these do not exist, the Sanitary Authority should supply the need. Back-to-back houses should be absolutely prohibited. It is a check to pride in our Sanitary progress that in Glasgow 20 per cent of the population reside in single rooms, and that in the United Kingdom, according to the last census, over three million persons live in overcrowded tenements.

Recreation grounds or open spaces should be found in every town, and the mental over pressure of children from the system of cram in education should be prevented by sounder psychological methods.

A proper system of sick nursing for the poor—that is for those not sufficiently destitute to be removed to the workhouse, and yet unable financially to provide for themselves—should be part of the regular equipment of every town and district. Whether this should be by the institution of State Hospitals, or by the addition to the staff of every Sanitary Authority, or Board of Guardians, of one or more district outdoor nurses (in proportion to the number and needs of the population) who should be as much officers of the Authority as the Medical Officer of Health or the Poor Law Medical Officer, and whose services in all cases, infectious or otherwise, should be (under proper regulations, of course) at the disposal of all sick people, poor enough to be entitled to them, is a point for discussion.

These, Gentlemen, are some of the things in which it is our duty to advise and to guide. In some of the most important matters that concern the well-being and the well-doing of every member of the community from his entrance into the world, to his solemn exit, we have direct and serious responsibilities.

It should be our constant aim to favour and to create such a view of all matters that lie under our authority that every

citizen, whatever his sphere of life, should grow up in such conditions—physical, mental and moral—as will make the product—the whole man or woman—the best that could result from the initial germ. Too high a view cannot be taken of our positions as guides in Sanitary Medicine, and when we realise that the result to humanity of our labours is to prevent disease, to decrease, and, where possible, to banish sickness and suffering, to diminish mortality, to prolong life, with all the consequent gain—in comfort, in freedom from pain, in true happiness, in usefulness of service, Ay! and in measurable money value—I think we shall, one and all, be encouraged, more than ever, to renew our efforts and to labour on, each in his own sphere,

“ In the unfailing hope, although
It be not granted us to see,
Yet that the coming age shall know
We have not wrought unmeaningly.”

ANTISEPSIS *VERSUS* ASEPSIS.

PROFESSOR MIKULICZ.

(*Deutsche medicinische Wochenschrift*, June 24, 1897.)

HE remarks, “ It is an open secret that the results of the treatment of wounds have not improved since aseptic methods were substituted for antiseptic methods.”

Relying upon his own experience and upon the evidence of other surgeons, Mikulicz considers that when the operations are performed by the aseptic methods it is impossible to be so certain, as was the case before, that the wounds will progress without inflammation and suppuration. In the majority of minor cases suppuration in the canals of the stitches does not seriously affect the course of the case. But in more severe cases suppuration may occur in the depth of the wound, which,

even when it does not endanger the patient's life, may often ruin the object of the operation. The chief failure of the aseptic method is caused by inflammation, following the use of catgut and defective sterilisation of the hands. Mikulicz says that catgut aseptic until the time of operation may be infected by the imperfectly sterilised hands of the operator. That the fault does not lie with the catgut, is proved by the fact of ligatures out of one of the same bottles being in one case retained without reaction, while in another suppuration arises. Anyone who knows the depth at which germs are found in the skin, in the ducts of skin glands, in cracks and fissures, and in and about the nails, cannot hope to get perfect sterilisation of the hands.

It is possible for hands to pass the bacteriological tests, and then in the course of operative manipulation to have the aseptic surface rubbed off, and thus germs hidden before become exposed and may lead to severe inflammation.

If, thanks to Fürbringer's method—the use of alcohol and corrosive sublimate—we get this superficial asepticity, it after all is of little use, because of its very superficiality.

In Mikulicz's clinic last winter session, Dr. Gottstein examined the hands of every one taking any share in the operations as soon as the sterilisation of the hands was finished.

It was seen that sterilisation of the hands varied very greatly with different persons and even with the same person on different days.

The only person who was almost always free from germs was the man who attended to the instruments, and who practically never came into contact with the sick. Among the surgeons not one was constantly free from germs. Usually the hands showed the presence of staphylococcus albus, but at times the staphylococcus aureus was also seen.

Under these circumstances there only remained either to return to our former antiseptic methods—of course keeping all the best of our new methods—or to carry aseptic measures to their extreme limits. For this Mikulicz has practised operating

since Easter, 1896, in sterilised gloves, and he would have ordered this method to be adopted in his clinic at once but for the faith of his assistants in alcohol and corrosive sublimate. For three months the use of gloves has been enforced in the clinic, and the result has been so striking that Mikulicz is persuaded that by this means the *great defect of the aseptic method is removed*. In three months he has not had any inflammation in incisions completely occluded, and hence he has entirely discarded drainage in wounds suitable for healing by first intention. Stitch abscesses have practically disappeared. In the few cases where a drain was left in the wound the secretions of the wound were usually free from germs. Sometimes the union was delayed, and in one case delay was of some duration. Cocci were found in the cases with delayed union, chiefly staphylococcus albus. Mikulicz thinks that in these cases the cocci entered through the drain aperture with the patients' epiderm.

The gloves used are simple white cotton gloves, known to the trade as "footmen's thin gloves." A dozen pairs cost half-a-crown. They are sterilised with the dressings; they wash easily, and hence may be used over and over again, and they do not increase the cost of the operation by more than one penny. Of course, even with the gloves in use, the same careful sterilisation of the hands must be carried out before putting the gloves on—alcohol and sublimate. When the operation is short and uncomplicated one pair of gloves will do, but when the case is prolonged the gloves become covered with blood and should be changed several times during operation. Any exposure or touching of possible septic points will also necessitate their change.

When operating on the stomach or intestines, Mikulicz wears the first pair until he opens the viscus, for inserting the sutures the second pair, and a third pair after inserting the sutures. The assistants and the instrument man are all in gloves, which they change as required. After a little practice the gloves do not in any way affect palpation, grasping and sewing; in fact,

the seizure and retention of tissues is much easier in gloves than without them. The times of all operations remained as before. Of course sometimes one has to remove the gloves, for instance, to make out a supposed small ulcer of the gastric mucous membrane. In this case, when the examination has been made, a new pair of gloves must be put on. If the operation is in a region or tissue which is infected or inflamed, it is evident that gloves are of no use, and would only assist the carriage of germs. Hence operations on the mouth, gullet, rectum, urethra, etc., are performed without gloves. Küstner has used gloves for gynæcological abdominal sections, and is very satisfied with their value.

The first to propose the use of gloves was Robb, in 1894, and Zenge-Manteufel in the same year supported him. They both used rubber gloves. Mikulicz tried rubber gloves and found them very inconvenient, while they do not preserve the wound from infection any more than thread ones do. He reserves rubber gloves for the preservation of his own hands from infection when operating in a purulent region. In addition to the hands of the operator, infection of the wound may be due to germs from the mouth and nose of the operator and assistants, &c.

Flügge has proved that even in quiet conversation bacteria are ejected in particles of saliva from the mouth into the air around the speaker. Hence Mikulicz prohibits talking, but as it is impossible not to say a word sometimes, he and his assistant wear moist towels over their noses and mouths. When a beard is worn this is included in the towel. It is as easy to breathe through such a towel as through a lady's veil. The veils are fastened on to a small cap.

These procedures remove the two great deficiencies of the aseptic method of operating. Still, even these do not give perfect asepsis. For this there are still other sources of infection to be removed. For these experiments Mikulicz had the aid of Professor Flügge. It is evident that as regards the skin of the patient it is impossible to render it sterile. But the

danger from this is not great since the epiphytes living upon the skin are generally of an innocuous nature. Sometimes however, the staphylococcus albus was found in the deeper layers of the epidermis.

As regards infection from the air, there exists a whole literature upon the subject. This was not much to be feared with the antiseptic methods, but the conditions are rather different with aseptic methods.

Professor Flügge is convinced that modern surgeons do not pay sufficient attention to this infection from the air. It is quite sufficient in this reference to point out the facts stated above as regards speaking, sneezing, or coughing. This danger is of course increased by the presence of visitors. Hence the number of spectators should be limited, and those admitted should give every proof of having taken all precautions.

It is impossible to operate aseptically before a large audience.

Mikulicz has objected for years to have large crowds in his operating room, and he thinks it is quite enough to have six to ten students in the room who have been carefully prepared.

Since it is extremely difficult to fulfil all the conditions of *aseptic* surgery, in general practice Mikulicz recommends the general practitioner to keep to *antiseptic* procedures with any modern improvements; whereby he will obtain better results than by attempting aseptic methods.

FRED EDGE.

VOLVULUS IN A HERNIAL SAC, AND IN THE ABDOMEN.

TWO CASES, WITH REMARKS.

BY J. T. J. MORRISON, M.B., F.R.C.S.

Definition.—The term Volvulus was formerly applied somewhat loosely to various forms of mechanical abnormality of the intestines, including intussusception. Modern usage limits the word, more precisely, to displacements in the nature of turning or twisting of the gut, so as to produce more or less obstruction.

Varieties.—Rokitansky described at least three different forms. His work was noticed by South in his translation of Chelius' System (1847);* and later, in detail, by Sieveking in his translation of the *Pathological Anatomy* for the Sydenham Society (1849).† The three varieties referred to are the following:—

1. Twisting of the bowel upon its own axis.
2. Rotation of a loop of bowel around its mesenteric axis.
3. Intertwining of two adjacent lengths or loops of bowel.

1. In the first form, even semi-rotation will bring the walls of the bowel into contact, and so close the lumen. Such an occurrence is scarcely possible in the small intestine, owing to its free mobility, and the absence of angular flexures. Rokitansky had met with the condition only in the ascending colon. Treves‡ mentions an example in that region reported by Curling; and Owen, of St. George's Hospital, has recorded a fatal case.|| Three cases in which the cæcum was twisted around its vertical axis are narrated by Fagge.§ An interesting

* South's Chelins, vol. ii., p. 94.

† Rokitansky's Pathological Anatomy, vol. ii., p. 52.

‡ Intestinal Obstruction, p. 153

|| *Lancet*, 1886, vol. i., p. 828.

§ Guy's Hospital Reports, vol. xiv.

case of the sigmoid flexure making one complete turn on itself is described by Dr. W. J. Mayo, of Rochester, Minnesota, U.S.A.; abdominal section was performed, and reduction of the twist effected after incision of the sigmoid, the operation resulting in recovery.¶

2. The second form embraces the great majority of all cases of Volvulus. It is produced when a loop of bowel becomes rotated around its mesenteric axis, the included mesentery being thus rolled up in the form of a cone with its apex at the twisted stalk. This occurs most commonly at the sigmoid flexure; but instances are on record where the ascending colon and cæcum (when possessed of a long meso-colon), the ileum, the jejunum, and the duodenum, have been severally involved in the same manner. Bryant and Goodhart report a case in which the twisting was at the cæcum; temporary relief was afforded by enterotomy, the patient surviving the operation ten days.* An example of jejunal volvulus is given by A. E. Barker, the diagnosis being confirmed by abdominal section, and the bowel was untwisted with a successful result.† The two cases reported below also belong to this group, and there are grounds for localising the trouble in the ileum in each case.

3. The third form, of which there are several variations, is decidedly rare. The usual condition is for two adjacent loops to become so intertwined that one loop or coil constitutes the axis around which the other is wound. Thus a part of the large intestine, e.g., the sigmoid flexure, may become engaged with a suitable loop of the small gut, and either of them may form the axis of the twist; or both coils may be derived from the lesser bowel. Since each of the loops suffers strangulation, the symptoms of obstruction are as a rule exceedingly acute; and, in the absence of relief, collapse, followed by a fatal issue, speedily ensues.

Causation.—The most important factor in causation is un-

¶ *Annals of Surgery*, 1893, vol. ii., p. 28. (N.B.—This case ought probably to be placed in the next group.)

* *Lancet*, 1886, vol. ii., p. 963. † *Lancet*, 1886, vol. i., p. 448.

doubtedly an unduly long mesentery of the portion of bowel involved. This may in rare instances be congenital ; but far more commonly, it is an acquired condition. In the case of the ascending colon, chronic constipation, with accumulation of fæces and gas and unequal distension of different portions, may bring about elongation of the mesentery and a twisting of the gut on its own axis ; indeed continued or repeated over-filling of any given part of the intestinal tube, from whatever cause arising, tends to produce a local stretching and lengthening of mesentery. This will explain the proneness of the sigmoid flexure, (the region affected in the great majority of all the cases), to become rolled into a volvulus ; for, in habitual constipation, it is constantly packed full, and its natural C-shape favours the sagging of the heavy coil into the pelvis with consequent elongation of the meso-colon ; whilst at the same time the ends of the loop may become approximated by inflammatory thickening of the portion of mesentery between them ; and thus is formed a *quasi* pedicle around which the entire loop can be turned. So also a coil of small bowel may be individualized by prolonged or frequent inclusion in a hernial sac, or by hanging down as an inert mass into a too-capacious pelvis.

The following is a summary of the two cases reported :—

Case 1. Richard C., a labourer, aged 38, was admitted to the Queen's Hospital on October 1st, 1894. He was brought to the Casualty Room by his wife about 7 p.m., obviously extremely ill, with pale and shrunken face, and an expression of great anxiety. He complained of agonising pains in the left groin, where, on examination, there presented an inguino-scrotal swelling as large as a fair-sized child's head, and having a neck extending up to the internal abdominal ring. The skin over the swelling was very tense, and the gentlest manipulation of the parts increased the pain to an intolerable degree. The house surgeon at once gave morphine, gr. $\frac{1}{4}$, subcutaneously. Palpation caused such acute suffering that continued taxis was impracticable ; but, so far as could be made out, the swelling was wholly irreducible, and the evidence of impulse was

negative, or at the most doubtful. On inquiry it was found that the patient had had a double inguinal rupture for several years. He had kept the bowel up in the abdomen with fair success, by means of a truss, until about a month prior to admission. During the last few weeks the hernia had been continuously down on the left side, in varying degrees, the truss only partially retaining it. This was attributable to violent fits of coughing consequent upon an attack of bronchitis. About four hours before he was brought to the hospital, during a paroxysm of coughing, the left rupture suddenly increased prodigiously in bulk, whilst at the same time it became the seat of pain so acute as quickly to induce a condition bordering on collapse. The bowels had been moved that morning, and there had been no vomiting.

Operation.—Herniotomy was performed about 8 p.m. the same evening. With the customary precautions for asepsis, the sac was quickly exposed by the incision through the tightly stretched integuments, and its cavity opened, when there escaped several drachms of blood-stained fluid, followed by the delivery of packed coils of small intestine, estimated to measure a yard in length. This voluminous part of the contents was only slightly congested, having suffered but little from its incarceration. There was now disclosed in the depths of the sac another loop of small bowel, about twelve inches long, and very dark in colour, though its surface showed no loss of lustre. This loop was twisted round its mesenteric axis, and was therefore an example of Rokitansky's second form of volvulus. It was obviously the cause of the acute symptoms, as well as the source of the blood which stained the fluid found in the sac. On drawing out a little more bowel beyond the implicated portion, a firm substance could be felt within the layers of the mesentery—most likely lymphatic glands. After relieving the twist, the entire hernia was reduced with no greater difficulty than might be expected with such a considerable protrusion of gut (about four feet in length). The reduction being facilitated and hastened by a sparing use of the hernia knife against the

upper crescent of the internal abdominal ring. The capacious peritoneal sac was then stripped out from its bed in the scrotum and canal (a proceeding of some delicacy, owing to the thinness of the wall); and a catgut ligature having been applied around the highest part of the neck, the sac was cut off just below this point and removed, the short stump being then reduced within the internal ring. Lastly the pillars of the external ring were sutured together with silk, a drainage tube passed through a dependent opening in the back of the scrotum, and the operation wound closed.

After History.—For a week the bronchitis was troublesome, but was relieved by suitable treatment, and in other respects recovery was uninterrupted. The drainage tube was removed in thirty-six hours, and the wound healed throughout in a few days by first intention. The bowels were moved at the end of a week by simple enema. Patient was discharged cured on November 2nd., wearing a double truss, of which the spring on the left side exerted merely nominal pressure.

Case 2. Catherine E., æt. 53, a corpulent woman, with flabby tissues, was admitted to the Queen's Hospital on January —, 1897, with symptoms of acute intestinal obstruction of three days' duration. The recent previous history was to the effect that she had suffered from prolapse of the uterus, and for this condition, together with constipation and obscure abdominal pains, she had been under medical treatment for several weeks. Three days before admission a rectal enema had been administered to the patient by a midwife, who, at the same time, replaced the completely prolapsed uterus. In the course of these manipulations she was suddenly seized with intense abdominal pain, which continued until admission, whilst complete constipation and persistent vomiting quickly supervened. When brought to the hospital the patient's condition was grave in the extreme; the face wore the characteristic pinched abdominal expression, and was clammy with cold sweat; the pulse was quick and small; the respirations were hurried and moaning; the tongue was coated with a dry, foul fur,

and looked as though it had been baked ; and there was frequent stercoraceous vomiting. Acute general abdominal pain, most intense in the umbilical region, and increased by palpation, was complained of. No lump could be felt in the abdomen, which was moderately distended ; and there was no hernia in any of the usual situations.

Operation.—An hour-and-a-half after admission the woman was opened in the middle line below the umbilicus. Foul-smelling, blood-stained serum, of which there was an abundance (probably several pints), at once began to escape. On digital exploration of the cavity, a thread-like adhesion was felt passing from the great omentum to a greatly distended coil of small intestine. The adhesion, which was about three inches long, was very slender, and gave way under the examining finger. After enlargement of the wound, the distended portion of bowel was brought outside and inspected. It proved to be a typical example of Rokitsansky's second variety of volvulus, situated in the small intestine. The loop of bowel, presumably ileum, measured about sixteen inches in length ; it was deeply congested and ecchymosed, and the involved mesentery was as thick as one's hand, and nearly black with extravasated blood between its folds. Around the mesenteric axis the loop had rotated from left to right. There were no recent adhesions, and no old one except the above mentioned thread, so that it was a simple matter to untwist the volvulus, and replace the bowel within the abdomen. The operation was completed by mopping out the cavity with sterilized lint, without irrigation, and stitching the wound from end to end without drainage.

After History.—Instant and complete relief followed the operation ; the pain vanished, vomiting ceased, and within a few hours the bowels acted spontaneously. The patient made an uninterrupted recovery, the wound healing by first intention, and she left the hospital in twenty-six days.

ON THE TREATMENT OF SCIATICA.

BY EDWARD CURETON, M.D. BRUX., M.R.C.P. EDIN.,
SENIOR PHYSICIAN TO THE SALOP INFIRMARY, ETC.

THE subject of sciatica and its treatment I hope may prove worthy of your attention for a few minutes. In speaking of sciatica it is not intended to refer to the secondary forms, namely, those dependent upon some pelvic disease or other, such as rectal cancer or cancer of the uterus, which are usually bilateral. To-day it will be better to speak of the primary form, that in which we have the patient complaining of a dull aching pain in one or other thigh, the usual site of the pain being between the tuber ischii and the great trochanter. It will generally be granted that to call this affection a neuralgia is not correct, for the pain is not usually paroxysmal ; but, on the other hand, more or less constant and on the increase, and of a spreading character, dull, heavy, and burning, and made worse by movement of the part ; and an attack of pain may even be produced by any motion of the muscles of the affected limb. Further disorders of sensation are also common, such as a feeling of pins and needles, numbness and tingling, and sometimes irregular patches of anæsthesia and often vaso-motor changes are observed, such as great coldness of the limb affected.

There is generally in prolonged cases more or less wasting of the muscles, which cannot be explained wholly by disuse of them, but depends upon an actual parietic condition of the muscles, as it is observed that the excitation of the muscles affected to faradism is diminished. Occasionally, too, we have fibrillary twitchings or, it may be, painful cramp. It occurs to me that the correct name to give these cases is that of a perineuritis, an inflammatory lesion affecting the nerve sheath of varying extent, and those cases, when the pain is limited to the distribution of the nerve and not to the nerve trunk, would more probably be classified as of neuralgic nature, especially if the pains are of a paroxysmal type, and it may be with a history

of malaria, when they are often bilateral ; mixed cases will, of course, be met with from time to time. The lightning pains of tabes will be recognised by other evidence of this affection : as the gait, the eye phenomenon, and the absence of knee jerk. Pathological evidence, when forthcoming, will probably support the clinical view here taken as to its being a perineuritis not only affecting the nerve sheath proper, but also in some cases the interstitial nerve tissue, and thereby causing the nerve fibres themselves to become affected.

Sir Richard Gower says of this affection, that sciatica can no longer be regarded as a neuralgia, but a form of neuritis, on these grounds:—

1. The conditions under which the disease occurs are very different from those which attend unquestionable neuralgia in other situations.
2. The neurotic nature of the affection is clearly indicated by the facts of pathological anatomy, scanty though they be.
3. The symptoms in severe cases are proof of the existence of neuritis, the wasting of the muscles and the anæsthesia preclude any other explanation.

Returning to the clinical side of the case and speaking from an experience of about 20 cases in this hospital and outside ; the first thing noticeable is the age, all the cases but one were over 30 years old, the oldest being 46, then generally there is a history of rheumatism in the family or the individual attacked, or it may be gout, and all but two were males. As to the exciting cause, many of them were due to exposure to cold and wet. The pain came on slowly and was worse at night and on any attempt at movement, extending down the nerve to the ultimate ramifications, and there is generally a tender point at the notch or middle of the back of the thigh, pressure here causing acute pain.

The next point noticeable was the duration of the suffering. Nearly all the hospital cases had been suffering and unfit for work for more than six months. The point which appears of most interest from the standpoint of treatment is this. I have

noticed that in the worst of the prolonged cases in this hospital, with a rheumatic history, that on examination of them and on getting them out of bed for this purpose, if well enough to do so, apart from the stiffness inseparable from the condition, that they all assumed a certain posture when standing opposite the examiner, the foot of the painful limb is put forward in front of the other, and if asked to put the heels together and keep the knees straight and try to touch the ground with the fingers of both hands, they are quite unable to do so, on account of the great pain which this manœuvre produces. In cases which are unable to leave the bed, the same significant severe pain is produced by placing the patient on the back and getting hold of the affected limb by the ankle and knee and raising the whole limb upwards towards the abdomen, when the patient almost immediately begins to complain of the pain. In such cases as these there must be thickening of the nerve sheath and adhesions which pull upon, or in other ways press on the nerve to account for the presence of this sign.

As we know the milder cases get well by rest in bed, counter irritation over the nerve, warmth, alkalies and salicylates in rheumatic cases, with iodide of potassium, and colchicum if there is gout, and nitro glycerine and daily hot alkaline baths, and guaiacum and hypodermic injections into the nerve, thus combining morphia with acupuncture. But it will be noticed that the more severe cases, where the clinical sign above recorded is observed, do not yield at all to the above kind of treatment; for these cases there is nothing but nerve stretching. Years ago this was a formidable operation, and I well remember 15 years ago my surgical colleague, Mr. Eddowes, cut down on the sciatic nerve of a case of mine, and we stretched the nerve. I have not the notes of the case, but well remember the man. He was a carpenter, 40 years old, who worked in a damp shop and had been from work for 26 weeks, and I further recollect drawing Mr. Eddowes' attention to the posture this man assumed when standing opposite to us, and suggested that his case should do well by nerve stretching, and the man made an excellent recovery.

Since then, from time to time, cases of a more or less similar character have turned up, and it occurred to me that cutting down upon and stretching the nerve was a very serious operation, and it may be dangerous in broken-down constitutions. I have, therefore, since then, whenever I can obtain the above sign as well marked in severe and prolonged cases which do not yield to the usual remedies, with the help of the house surgeon, under an anæsthetic, stretched the nerve by grasping the affected limb with one hand at the ankle and with the other hand over the knee to prevent flexion, and then forcibly flexing the *straightened* limb upon the abdomen, using considerable force, following this, if necessary, by a blister or a morphia hypodermic, and wrapping up of the limb in cotton wool and bandage, followed, if needed, by massage and electricity.

The first case was that of a woman, in 1891, who had been ill six months. We stretched the nerve on November 15, and she went out, out of pain and relieved, on 21st following.

Then comes the case of a man aged 46, who had been ill six months, who came in February, 1895. On the 17th we stretched the nerve, and he went out practically well on March 16.

Then comes the case of a man, age 32, who had been in pain two months, whose nerve we stretched on July 1st, 1896, and he went out, out of pain, but lame, on August 8th, 1896.

In drawing your particular attention to this line of treatment and strongly recommending it to your notice, nothing new or original is claimed for it. You will find it mentioned in text-books and for all I know may be in general use; but in pointing out the class of cases most likely to derive benefit by this method of treatment, and advocating its more general adoption in place of the more serious surgical procedure of cutting down upon and handling the nerve, it may be some useful purpose may be served, as it is not necessary to call this an operation to the patient, and it is therefore more readily assented to, and in my opinion you are justified in general, in expecting as good a result as if you cut down upon and stretched the affected nerve.

REPORTS OF CASES.

A CASE OF DIFFICULT DIAGNOSIS.

BY MR. LIONEL STRETTON.

M. W., age 32, has been married twelve years, has had five children and one miscarriage. The youngest child is nearly two years old. She suckled this child until January last, and did not menstruate during the time. Her monthly periods came on irregularly after weaning the baby, but in April, May, and June, they appeared at regular intervals, her last menstruation being on 13th June and normal in character. On 11th August she sent hurriedly about mid-day saying that a miscarriage was occurring. I saw her at 2 p.m. She was walking about the room and had constant labour-like pains. She said there had been "a show" and she felt rather fainty.

She is a stout flabby woman with deficient capillary circulation and a feeble heart.

Per vag: the os was found patulous, the uterus enlarged, and slight hæmorrhage going on.

She was advised to lie quiet on the bed; a nurse was procured and she was to send for me when necessary. About 6 p.m., I received an urgent message saying she had severe fainting, and on arrival found her much collapsed. Between that time and midnight she had a dozen or more attacks of severe syncope requiring every effort to keep her alive—hypodermic injection of ether, strychn., and digitalin, and free administration of stimulants. There was no change in the local conditions. About 11 p.m., she was seized with violent pain in the liver region, and this was repeated on several occasions and accompanied by fainting. I furthermore ascertained that she had hearty meals of pork on the Sunday and Monday, and sausages on the Tuesday. Her bowels had been open on the Wednes-

day morning. Her pulse was almost imperceptible and she was very dusky in appearance, not blanched.

She had a most severe attack of syncope just after midnight which lasted for nearly half an hour, after which time there was no recurrence of these attacks. The following day she was in a very critical condition, her countenance dusky, her pulse 140, and her circulation very deficient.

Per vag: the os is still patulous, probe enters three inches, uterus is not so freely movable as natural.

A dose of castor oil was administered and ammonia, ether, and digitalis regularly given. From this time onward she gradually improved; there was no return of the syncope or pain. On the third day she developed an attack of jaundice and there was a considerable quantity of bile in the urine. On the fifth day she passed a substance per vag: about the size of the palm of the hand, consisting of decidual membrane, etc.—no embryo was seen, but it resembled an ordinary abortion. She was up in three weeks and menstruated naturally a month after the abortion.

The case is of interest from a diagnostic point.

In the first instance it appeared to be a clear case of extra uterine pregnancy, and had she been a fit subject for operation it is a question that would certainly have arisen. As it was there was nothing to do but endeavour to avert her death.

2nd.—Could such severe symptoms be due to the pending abortion? In the cases in which I have seen fainting there has usually been considerable pain, which was here absent, and profuse hæmorrhage of which there was no evidence either outward or concealed, *i.e.*, there was no blanching, and between her attacks she was inclined to cyanosis.

3rd.—Did the pain in her liver indicate the passage of a gall stone or inspired bile and so account for her condition?

4th.—Had the injudicious diet anything to do with it?

It is easy to be wise after the event, and it now seems to be quite clear that it was a case of ordinary abortion, complicated with hepatic colic due to obstruction plus the injudicious diet in a subject particularly liable to syncope.

All of us are aware of the grave conditions—difficult to explain—sometimes caused by a meal of pork or similar uncertain food, and this case seems to emphasise the importance of enquiry into the diet in cases which appear at first sight sufficiently plain without it.

EXTRAORDINARY CASE OF STONE-SWALLOWING.

UNDER THE CARE OF DR. CARTER.

REPORTED BY MR. GREENWOOD, HOUSE PHYSICIAN.

A patient was admitted into the Queen's Hospital, on September 29th, 1897, whose manner of living seems well worth recording.

H. G., male, æt. 24, and passing under the stage name of "The Human Ostrich," was admitted complaining of severe pains in the abdomen and "giddiness in the head."

Family History.—His mother lived to be 74 years of age and his father died at 94. Both had earned their living by stone-swallowing. The patient has four brothers and five sisters alive and healthy, one of the brothers being a professional stone-swallower.

Past History.—Patient has earned his living by giving displays of stone and sword-swallowing. His eccentricity is worth describing in more detail. He is accustomed to give a number of performances during the day, and at each performance he is careful not to take more than about a handful of pebbles. In selecting his stones he avoids all cornered ones, preferring if possible to obtain oval smooth stones, averaging in section, about the size of a half-penny. Within the twenty-four hours he is able to take about 8 lbs. of stones, and is careful not to go beyond this limit. At each performance he further swallows pieces of brick and glass, both of which he masticates before swallowing. Occasionally he varies his programme by giving exhibitions of sword and watch swallowing. For the former

trick he uses a straight twenty-four-inch sword ; while it is down in the oesophagus he fires off a revolver or balances a 28 lbs. weight on the hilt. Before passing the sword he shifts the larynx bodily to the left side of his neck, apparently beneath the sterno-mastoid muscle, so that the gullet can be distinctly felt from the front, and leaves a straight course for the sword. In swallowing a watch he selects a lady's watch and pulls it back by means of a string or chain attached to the ring. The stones and other articles which he swallows are passed daily per rectum without the least inconvenience, as a rule. He does not remember when he first learnt his performance, having been trained to it from earliest childhood. He states that he once tried to train another person to do the same tricks, but the results were disastrous, and soon ended in an operation for intestinal obstruction. He takes an extremely regular and moderate diet, which he never varies : thus, his breakfast consisted of two eggs (swallowed whole, minus the shell), together with "two-pennyworth" of brandy and a pint and a half of milk. As a rule he takes nothing for dinner, or if he does have anything it is a little porridge, milk pudding, or bread and butter with milk. In the evening he has a meal similar to his breakfast. On examination, the patient was well-developed and healthy in appearance. His tongue was slightly coated. The abdomen was lax ; and on succussion, sounds could be distinctly heard, which the patient attributed to the knocking together of the stones inside him ; and he was accustomed to demonstrate this to his audience after a performance as a guarantee of good faith. There was marked tenderness with some increased resistance at about McBurney's point. There was nothing abnormal in his heart and lungs.

He remained in hospital for about four days, and then had to leave to look after business matters. While in bed he complained of occasional attacks of severe colicky pain, but in the intervals was quite comfortable. An enema was given with a very good result, and after that he was much easier, and the tenderness moved from the cæcal area to the lower epigastric

region. Whilst in hospital he passed no stones in the stools, although he had swallowed a large number on the day previous to his admission. With an idea of testing the Röntgen's rays on the case, a skiagraph was taken, but it was not successful inasmuch as the patient was too nervous to keep still.

It is worthy of note that, despite his extraordinary habits, he enjoyed very good health, stating that he had never previously been ill in his life. Further, that although he took quite sufficient food for a practically sedentary life, it was quite inadequate to allow of any manual work. Thus he stated that if he attempted to work in any form with his hands he was very soon tired and had to give it up.

Dr. Carter's opinion was that at the time of his admission one or more stones had become impacted at the ileo-cæcal valve, setting up slight local peritonitis; and that the enema having dislodged the obstruction in that quarter, the onward passage had again been delayed in the transverse colon.

UNUSUAL ALCOHOLIC DELIRIUM.

UNDER THE CARE OF DR. KAUFFMANN.

NOTES BY CYRIL C. LORD, HOUSE-PHYSICIAN.

G. S., aged about 40, lamp cleaner, was brought to the Queen's Hospital on September 5th, 1897. On admission he was comatose, smelt of alcohol, and the account given by the policeman who brought him was, that he found him unconscious in the street. There was no sign of hemiplegia, nor was there inequality of the pupils.

The stomach was washed out, and the patient now partly regained consciousness. Presently he began of his own accord to stagger about the room, when it was noticed that he invariably turned towards his right side, and could not be persuaded, even by interposed obstacles, to turn to the left. As it appeared that acute alcoholism did not completely account for his condition he was admitted to the wards.

During the ensuing night he became noisily delirious, shouting

at the top of his voice and using much obscene language, and in order to keep him in bed recourse was had to the straps. Next day he was quieter, evidently in a cheerful frame of mind, ready to enter into conversation with anyone, answering fairly rationally, but when left to himself muttering incoherently; occasionally he would break out into loud shouting.

The following night and day were a repetition of what has just been detailed, in spite of his having taken 30 grains of combined bromides every four hours since the morning after his admission. Of sleep he had had practically none, and the delirium had been constant.

On the morning of the 8th one-seventy-fifth of a grain of hyoscine was given under the skin, after which he slept for two hours and a half, and as he was again delirious on waking the dose was repeated at night with the result that he slept four hours.

From that time the delirium, though for many days it persisted constant during waking hours, became more low and muttering. His attention, which at first had been easily attracted by questioning, could no longer be gained. The colour of the face, which for the first two days had been rosy, now became dusky; obstinate constipation came on, the breath grew foul, the tongue and teeth were dry and covered with sordes; but he continued to take milk diet well, and the pulse on very few occasions exceeded 120.

From the 13th of the month his general condition became still worse; he was now drowsy and semi-comatose during the greater part of the day, and could only now and then with difficulty be roused sufficiently to answer questions. The bromide treatment was now stopped as it was thought probable that the torpor was in a large measure due to it.

On September 16th the drowsiness had appreciably diminished, but he seemed less rational when roused than at any previous time. Strychnine was now administered subcutaneously in doses of one-fortieth of a grain when his general condition seemed to demand it. Next day he was still exceedingly feeble

and depressed with muttering delirium varied by outbursts of weeping, and his answers were barely rational. His voice was exceedingly hoarse and weak, and the dejecta were passed in bed. This was the patient's worst day; and thenceforward a slow improvement began, so slow that the change from day to day was scarcely perceptible.

On the 24th some meat was added to his diet and half a pint of ale given. Very gradually, together with his general health, his mental condition improved, and he was finally dismissed from the hospital on the 9th of October.

The urine on the few occasions that it could be obtained showed only a minute quantity of albumen, but no casts, and was of normal specific gravity. The temperature was irregular throughout his stay in hospital. For the first six days it ranged between 102° and 97° , being more often however above the normal than below. From the 11th to the 18th there was constant pyrexia with extreme ranges of 99° and 101° . After that date the fever became irregularly intermittent and gradually approached more and more to the normal line. The pulse had gradually fallen to 100.

Remarks.—The prolonged course of the illness is interesting, especially in view of the fact that the first effect of the drink, the coma, was so quickly recovered from. It was not possible to elicit from the patient at any time during his stay in hospital a trustworthy history regarding his habits, for when he left, his statements could not claim much reliance. Such history as could be obtained seemed to show that he was at ordinary times only a moderate drinker, but that he occasionally joined some friends in a heavy debauch; it was as a result of one of these excesses that he underwent the long illness just narrated.

A further point worthy of notice was the obstinacy of the patient's stagger to the right on recovery from the initial coma. It is not uncommon for a drunken person to stagger more on one side than the other, though as a rule the falling tendency appears to be about bilaterally equal; but such a fixed tendency to the right as was shown by this patient appears to be exceptional.

PERISCOPE.

STRUCTURE AND PATHOLOGY OF THE NERVOUS SYSTEM.

BY O. J. KAUFFMANN, M.D.

THE recent advances in our knowledge of the anatomy, normal and morbid, of the nervous system are of considerable magnitude. The number of investigators is growing, and in view of the complexity of the structures to be studied this is an advantage, though it necessarily renders a synoptic review more difficult. An endeavour will be made in this brief article to mention some of the more important results arrived at within the last two years. But only those researches will be referred to which are of special interest to the clinician; and owing to the vastness of the material, some which properly come under this category must be omitted. There are many investigations which throw great light upon our knowledge of the structure of the central nervous system, and which, being based upon anatomical research on the nervous system of lower vertebrates cannot be further referred to here. Prominent among them, however, it may be said, are the researches of Mr. G. Elliot Smith.

Commencing our abstract with the spinal cord, we may first note a research by Déjerine and Thomas (*Arch. d. Physiol.*, Ap. 2, 1896). These authors have investigated the course of the pyramidal fibres in apoplectic lesions of different ages. The main result of the inquiry is to shew that in man a considerable number of *uncrossed descending* fibres invariably occur in the *lateral pyramidal tract*, i.e., the "crossed pyramidal tract." The authors further succeeded in showing that the crossed pyramidal tract is continued downwards close up to the *filum terminale*, and that the direct pyramidal tract could be traced down as far as the root of the 6th sacral nerve. [All these con-

clusions are new as regards positive demonstration, though clinicians have long been aware of the prolongation downwards of uncrossed pyramidal fibres going to the lower limb. The results are, likewise, in contradiction with the currently accepted extent of both the lateral and the direct pyramidal tracts.]

Muratoff (*Neurol. Ctbl.*, xiv., 1895) concludes from investigation of a case of atrophy of the left cerebral hemisphere in a child, that the pyramidal fibres follow a triple course in the spinal cord, viz., that there are (1) crossed lateral pyramidal fibres; (2) uncrossed, or direct lateral pyramidal fibres; and (3) uncrossed anterior pyramidal fibres. [It will be seen that this is in conformity with the results of Déjerine and Thomas.]

Marguliés (*Neurol. Ctbl.*, xv., 8, 1896) had an opportunity of observing *isolated degeneration of the posterior nerve-roots of the 6th dorsal nerve*, and staining the ascending degeneration consequent upon the lesion. The fibres appear to run thus:—In the upper part of the dorsal cord they lie alongside the dorso-medial angle of the column of Burdach; in the lower cervical cord they lie near the dorsal end of the septum separating the columns of Burdach and Goll, sending some fibres to the posterior grey horn; and in the middle cervical region of the cord they are found in the external portion of Goll's column, extending forwards up to the grey commissure. Marguliés could find no descending degeneration in this case, but Déjerine and Thomas (*C. R. de la Soc. de Biol.*, 10, S. iii., 23, 1896) find a descending degeneration consequent upon localised disease due to syphilitic meningitis which compressed only the 8th cervical and 1st dorsal posterior nerve roots. These descending fibres were found in the posterior columns and proceeded in successive downward sections, from the postero-external to the postero-internal column.

Perhaps the most important investigation of the last two years is that of Weigert, who has discovered a new method of staining the neuroglia (*Abhandl. d. Senckenbergischen naturf. Ges. Frankfurt M.* xix., 1, 1895). The application of this method is at present confined to the central axis of man. The chief

result of the investigation, which opens a large field for future research, is that the commonly accepted doctrines regarding the structure of the adult neuroglia-cells are upset. The spider-like processes of the neuroglia-cells are shown to have no anatomical connection with those cell-bodies. The processes are stained, whilst the cell-bodies remain uncoloured. Similarly the true nerve-structures remain unstained.

There can be no doubt that the stained tissue elements are connective glia-tissue, for they proliferate in cases in which the neural elements are degenerated, and behave in every way like connective tissue. As regards the structure of these glia-fibres, they are straight or widely curved, solid and smooth, and present no widenings, divisions or anastomoses. In no case was any anatomical connection made out between the glia-fibres and the neural structures. The author points out, moreover, some new discoveries in connection with his staining method, *e.g.*, that the substance of Rolando, hitherto considered as consisting mainly of neuroglia is really very poorly provided with this tissue, and that the central grey matter is perhaps the most marked collection of neuroglia to be found in the spinal cord. In the deep layers of the cerebral cortex there is hardly any neuroglia.

Long ago Ranvier announced a result similar to Weigert's regarding the dissociation of the round cell-bodies from the glia, or spider-like fibres, commonly regarded as processes of the cells.

It must, however, be borne in mind that Weigert's researches refer to adult human tissues only, and it is not yet certain, according to the author, whether real spider-cells with processes do not occur in the embryo.

(To be continued.)

REPORTS OF SOCIETIES.

BRITISH MEDICAL ASSOCIATION.

BIRMINGHAM AND MIDLAND COUNTIES BRANCH.

The first meeting of the Session was held on Thursday, October 14th, 1897, the President, Dr. SAUNDBY, being in the chair.

The following resolution, proposed by Mr. Barling and seconded by Mr. Marsh, was carried unanimously:—

“That this Branch views with grave concern the present condition of the Army Medical Service, inasmuch as such a state of things must, sooner or later, entail serious injury to the health of our troops, if not actual disaster in war. That this Branch considers the state of the Service to be the natural result of the refusal of the Military Authorities to carry out reforms which are absolutely necessary; and would urge the Medical Profession, in the national interest, to make clear to the public the nature of these reforms and the need for them, to point out the serious consequences which may attend their postponement, and to make every effort to secure their speedy adoption; and that copies of this resolution be sent to the Editors of the local papers.”

Renal Calculi.—Mr. T. Vincent Jackson exhibited a collection of four calculi, weighing 440 grains, removed by nephrotomy from the right kidney of a young unmarried woman, aged 24, who had suffered from lumbar pain and vesical irritation for a long time previously. Two days afterwards she miscarried of a four or five month foetus, and died from uræmia ten days after the operation. The *post mortem* examination revealed the left kidney entirely filled with 11 calculi of various sizes, large and small, weighing 920 grains.

Large Parotid Tumour.—Mr. T. Vincent Jackson exhibited

a married woman, 35, from whom a very large parotid tumour of the left side, weighing nearly five pounds, was removed on August 10th. The tumour, which had been growing for twelve years, occupied the whole of the left side of the neck, extending upwards above the ear level, and downwards much below the left clavicle, in front to the angle of the mouth and under the chin to the right, considerably overlapping the sternum and passing beyond it to the other side and backwards to the trapezius muscle.

Measurements.—From top to bottom $15\frac{1}{4}$ inches, and from front to back $13\frac{1}{4}$ inches. During the operation, which was of an extensive character, the left external carotid artery was ligatured; the parotid duct necessarily required division, and a few branches of the cervico-facial division of the facial nerve were also cut through. The report of the microscopic examination of the tumour stated that "it may be called a myxosarcoma; the present specimen is rather more cellular than is usual in such tumours."

Photographs showing front, side, and back views of the tumour before removal, as well as of the tumour after removal, were shown.

Mr. Vincent Jackson read a paper on "The Modern Treatment of Simple Fracture of the Patella."

Dr. Kauffmann read a paper on "Some Cases of Delayed Lead Poisoning."

MIDLAND MEDICAL SOCIETY.

The Annual Meeting was held in the Medical Institute, Birmingham, on Wednesday, October 13th, the President DR. ALFRED CARTER being in the chair.

Mr. J. W. Taylor was unanimously elected President for the ensuing year.

The report of the Council and the Treasurer's report were received and adopted. It was resolved to add £10 to the deposit account.

Votes of thanks were passed to the retiring president (Dr. Carter), the treasurer (Mr. Garner), the retiring secretary (Mr. Heaton), and the auditors (Mr. Marsh and Mr. Haynes) for their valuable services during the past year.

Mr. Garner was re-elected treasurer, Dr. Kauffmann and Mr. Christopher Martin were appointed secretaries, and Mr. Marsh and Mr. Haynes auditors for the ensuing year.

The following gentlemen were elected to fill the vacancies on the Council: Mr. Eales, Mr. Barling, Dr. Foxwell, Mr. Marsh, and Mr. Heaton.

Mr. Greenwood and Mr. Wood were elected members of the society.

REVIEWS.

PERITYPHLITIS AND ITS VARIETIES.*

THIS monograph of sixty pages is a reprint from "A System of Medicine," edited by Dr. Clifford Allbutt. It will be welcomed by the medical profession by reason of the importance of its subject, and the authoritative weight of its writer's opinion. By perityphlitis is understood a peritonitis localised in the region of the cæcum, and we prefer this term to the uncouth one of "Appendicitis," as it more correctly expresses the pathological conditions with which in these cases we have seriously and practically to contend. It usually originates, as is well known, in the appendix, but sometimes it takes origin from the cæcum, and has nothing to do with the appendix at all. We do not altogether accept the author's views on the origin and nature of the concretions so commonly met with in the appendix, nor his statement that it is so difficult to distinguish between them and

* Perityphlitis and its Varieties—their pathology, clinical manifestations, and treatment. By Frederick Treves, F.R.C.S. Surgeon to the London Hospital, Surgeon in Ordinary to H.R.H. the Duke of York, &c. London: Macmillan & Co. Ltd. 1897.

a genuine foreign body. Gangrene of the appendix is often the result of high tension of its contents, exactly as is sometimes seen in acute phlegmon of a limb.

The section on Etiology is short and to the point, and we are glad to read Treves considers that gout, rheumatism and influenza are questionable etiological factors. The symptoms of the malady are classified for purposes of description into those of: (1) an ordinary attack, the case ending in resolution; (2) ditto ending in suppuration; (3) an attack of the mildest type; (4) a most intense and acute attack; and (5) certain peculiar forms of perityphlitis. The diagnosis of this disorder has to be made from gallstone colic, renal colic, perforation of a gastric ulcer, typhoid fever, colitis, intestinal obstruction, pelvic peritonitis, tuberculosis peritonitis, cancer of cæcum, hip disease, perinephritic abscess, psoas abscess, and "other conditions." He enumerates among the complications of the affection—pyelephlebitis and hepatic abscess, pleurisy and pneumonia, pulmonary embolism, thrombosis of iliac vein, fatal bleeding from abscess sac, intestinal obstruction, parotitis, fæcal fistula and hypochondriasis. The mortality of all cases, serious and mild, is about 5 per cent. Hospital statistics, from which all the slight attacks have to be eliminated, give a much higher death rate, about 14 per cent., and when abscess forms it is probably raised to 30 per cent.

The section on treatment is short and is divided into: (1) the treatment during an attack; (2) the treatment between the attack and (3) operative interference. Mr. Treves' opinions are well known in this country, and are probably those also of the majority of the most experienced British surgeons. They differ in some respect from the views held by most of the American surgeons. Details of operative treatment are not embodied in the work for the reason presumably that it was written as a chapter in a System of Medicine.

PRACTICAL MUSCLE TESTING.*

IN many respects this is a useful little book, and on the whole it is free from the want of lucidity due to the constant use of technical phrases which has struck us in the writings of the author hitherto perused. Even in this treatise however there are many points which are not so clear as they should be, and we think this end would have been more nearly attained had the notes, which continually appear at the bottom of the pages, and are nearly always of an explanatory character, been incorporated in the text, where a little weaving together of the sentences would have made the thread of the discourse more intelligible.

After briefly describing what is meant by the galvanic and Faradic currents, the reaction of degeneration, and electro-cutaneous sensibility, the writer gives the usual plates of motor points and of cutaneous sensory areas. Then follows a good chapter on the actions of muscles, where he shows how the combined effect of the numerous muscles which assist in carrying out even the simplest movements may be analysed. The plates in this chapter are a distinct help. The following section on Classification, the main points of which are borrowed from a French source, is excellent; and puts very clearly before the reader the pathological and clinical distinctions between the different forms of muscular atrophies, whether progressive or not. To our thinking this is the best part of the book. In the directions for treatment we are pleased to see that the author gives the strength, intensity, density, and time-duration of the current recommended, thus avoiding the vague general directions one usually encounters in such works. The last part of the book deals with Ling's muscular exercises, with special reference to those which have been adopted and adapted by Schott.

The whole subject of electricity in medicine presents great difficulties to a writer attempting a short treatise on the subject,

* Practical Muscle Testing and the Treatment of Muscular Atrophies. By W. S. Hedley, M.D. London: H. K. Lewis. 1897.

and taking it altogether Dr. Hedley has succeeded very well. Thoroughly to understand, however, all that he has written, a certain amount of preliminary knowledge is required on the part of the reader. On this account the volume before us is not so much a book for students as a succinct and trustworthy résumé suitable to the practitioner who wants to rub up his knowledge on the subject when a call is made upon his stock for the treatment of an unusual form of paralysis coming under his care.

LECTURES ON THE ACTIONS OF MEDICINES.*

THIS is a book which could only have been written by a physician having the complete mastery of the subject which Dr. Lauder Brunton is well known to possess. It is original in its conception and execution, and, from the point of view of practical use, is full of valuable hints as to the employment and manipulation of drugs. It is true that there is often a wide difference between a good lecture and a good essay, and perhaps many readers will wish that somewhat fewer anecdotes had been introduced, or, rather, that some of the anecdotes which were eminently suitable for the lecture-room had been omitted from the book; but in all probability these lectures when orally delivered were merely sufficiently lively and varied to attract and hold the attention of the audience—a merit which is certainly not too frequently to be found in the lectures delivered to medical students.

The ground covered by the lectures is very extensive. The first five deal with certain preliminary matters, such as the physiology of absorption and internal secretion, microbic action,

* Lectures on the Actions of Medicines; being the course of lectures on Pharmacology and Therapeutics delivered at St. Bartholomew's Hospital during the summer session of 1896. By T. Lauder Brunton. M.D., D.Sc. (Edin.), LL.D. (Hon.) (Aberdeen), F.R.S., Fellow of the Royal College of Physicians, Physician and Lecturer on Pharmacology and Therapeutics to St. Bartholomew's Hospital. London and New York: Macmillan and Co., Ltd. 1897.

and antiseptics; but from this point onwards the treatment of disease is directly dealt with. As is indicated by the title of the book, the mode of action of the various drugs receives very full consideration; and in the endeavour to make clear these points many outside matters are introduced. Thus, no small amount of knowledge as to the causation of disease and the origin of particular symptoms must have been incidentally acquired by those who were privileged to attend these lectures.

The last six lectures attack the subject from the starting point of the drugs themselves, these being taken in successive groups; and the characteristic effects of each group, in addition to its constituents, receive separate consideration. In this way is supplemented the somewhat more desultory treatment of the subject which is unavoidable in the first part of the book, in which the treatment of particular diseases is taken as the basis of the lectures. On the whole, although, as Dr. Brunton has pointed out in his preface, the book is hardly one on which the medical student can altogether rely for the material with which to pass his examinations, we consider that those were fortunate who had the opportunity of attending the lectures, and are sure that they will be extensively read by practitioners of medicine.

STUDENT'S GUIDE TO MEDICAL DIAGNOSIS.*

THE fact that this is the eighth edition of Dr. Fenwick's well-known book on Medical Diagnosis, is in itself sufficient proof of its high quality. The work is one which has always held a high place among works of its kind, and is designed for students as a guide through the intricacies of medical diagnosis; and the rigid observance of facts carefully classified cannot fail to foster exact methods in dealing with cases. The present edition has been greatly changed, for many parts have been completely re-written, and much additional matter has been added to bring it up to

* Student's Guide to Medical Diagnosis. By Samuel Fenwick London: J. and A. Churchill.

late, and the majority of illustrations in previous editions have been discarded for new. The system pursued by the author has been to emphasise the fact that the study of "pathology forms a basis of medical knowledge, and that without a clear conception of the *post mortem* appearances presented by disease it is impossible to understand the symptoms and physical signs observed during life." Consequently, each chapter opens with a short account of the chief diseases to which the organ is liable, after which physical signs and differential diagnosis are given with great clearness.

As might be expected, the chapters on Diseases of the Liver, Stomach, and Peritoneum are among the most striking in the book, and in every page we recognise Dr. Fenwick's well-known power of elucidation. The chapter on Abdominal Tumours is perhaps the most characteristic as an instance of how the dry details of differential diagnosis are so grouped together as to render the subject as simple and lucid as possible. On the other hand, the section on Rheumatism, Gout, and Rickets, strikes us as being unduly short, for the various forms of disease included under the name of rheumatism are just those which are most confusing to the student and junior practitioner, and their separation from gout is by no means an invariably easy problem in diagnosis. In nearly every section tables of symptoms and physical signs are given which cannot fail to be of great use. We strongly recommend Dr. Fenwick's Medical Diagnosis to all students of medicine.

THE MYSTERY AND ROMANCE OF ALCHEMY AND PHARMACY.*

MR. THOMPSON has followed up his book on the Romance and Mystery of Poisons with a somewhat similar volume on Alchemy and Pharmacy. He traces the Art of Healing from the earliest times in Egypt and China, through Greece, where it was kept

* The Mystery and Romance of Alchemy and Pharmacy. By C. J. S. Thompson. London: Scientific Press Limited. 1897.

alive by the Greek wizards, headed by Pythagoras and Epimenides and handed on by them to the wizards of ancient Rome. Chapters follow on the arts of Foretelling and Astrology, Black Magic, and the occult sciences. In the latter there is a funny description of an incantation scene. Superstition and its influence on medicine is then discussed. The ancient doctrine of signatories is expounded, and examples given of some of the extraordinary practices which were founded on this doctrine. The author gives a capital description of the old physic gardens, and the gradual formation of the two distinct branches of the healing art by the foundation of the College of Physicians, and later of the Society of Apothecaries. His account of the virtues ascribed to mummies, and of the artificial manufacture of these much-sought-after medicinal agents, is both interesting and entertaining. The closing chapters are devoted to the allusions to current medical knowledge occurring in the great poets and novelists.

This book can be recommended to any medical practitioner who is on the look out for material suitable for the opening paragraphs of an inaugural address on the history and growth of the art and science of medicine: there must be some about.

MANUAL OF BACTERIOLOGY.*

THE number of works on Bacteriology which have appeared within the last few years makes it rather difficult to realise that there is still room for another the size of Muir and Ritchie's manual. But, as the authors state in their preface, the book is intended primarily for students and practitioners of medicine, and they do not profess to enter exhaustively into the study of all the recognised forms of bacteria. Consequently they have restricted themselves more particularly to the pathogenic forms, and the chapters on pneumonia, typhoid fever, tetanus, diph-

* Manual of Bacteriology. By Robert Muir and James Ritchie. Young J. Pentland.

theria, are very clearly written ; and one of the most pleasing features about the book is the clearness of the illustrations—more than can be said for the majority of recent works on the same subject. One of the best chapters in the book is that on Immunity (xix). We consider that the authors have well succeeded in their endeavour to give to the beginner a work of great practical utility ; and the freedom of the book from a redundancy of detail is one of the means by which this has been obtained. We expect the manual to take the place it deserves as a reliable and useful book for the student of pathology, and we strongly recommend it.

CLINICAL METHODS.*

THIS work is, as its title implies, a handbook for the student of clinical medicine. The subject is one of some difficulty in treatment, and consequently any work of the kind cannot be otherwise than dry ; but in the present instance we rather think that much would have been gained by expressing the information in other ways ; and the whole book gives us the impression of having been sacrificed to a certain size of volume. We should have preferred to see the paragraphs on medical anatomy less curtailed, for, from personal experience in teaching, we believe this to be one of the weak points in clinical work. In the present instance many of the diagrams are anything but clear, especially those dealing with the nervous system. On the other hand, the book contains a large amount of information, in many instances clearly conveyed, which the student is obliged to get up. The sections on the respiratory and urinary systems are particularly well handled ; and if it be borne in mind that the work is only a detailed account of clinical methods it will admirably fulfil its purpose, and we certainly feel that the student will have in his hands a reliable and handy volume though a dry one.

* Clinical Methods. By Robert Hutchison and Harry Rainy, London : Cassell and Co.

THE PRACTITIONER.*

WE have to acknowledge the receipt of the fifth volume of the new series of the Practitioner, being the collected numbers published from January to June, 1897. The practice of binding these numbers is an excellent one; and the volume, which contains many papers of great interest, forms one of a series which is well worth collecting.

ALVARENGA PRIZE OF THE
COLLEGE OF PHYSICIANS OF PHILADELPHIA.

THE College of Physicians of Philadelphia announces that the next award of the Alvarenga Prize, being the income for one year of the bequest of the late Señor Alvarenga, and amounting to about One Hundred and Eighty Dollars, will be made on July 14, 1898, provided that an Essay deemed by the Committee of Award to be worthy of the Prize shall have been offered.

Essays intended for competition may be upon any subject in Medicine, but cannot have been published, and must be received by the Secretary of the College on or before May 1, 1898.

Each essay must be sent without signature, but must be plainly marked with a motto and be accompanied by a sealed envelope having on its outside the motto of the paper and within the name and address of the author.

It is a condition of competition that the successful essay or a copy of it shall remain in possession of the College; other essays will be returned upon application within three months after the award.

The Alvarenga Prize for 1897 has been awarded to Dr. Joseph Collins, of New York, for his essay entitled "Aphasia."

THOMAS R. NEILSON, *Secretary.*

* The Practitioner. A Journal of Practical Medicine and Surgery. Edited by Malcolm Morris. Old Series, Vol. LVIII. New Series, Vol. V. January to June, 1897. London, Paris, and Melbourne: Cassell & Company, Limited, 1897.

PUBLISHERS' DEPARTMENT.

New Inventions, Drugs, etc.

MESSRS. BURROUGHS, WELLCOME & Co. write to us that they have been awarded the Grand Prix and Two Gold Medals by the International Jury on Medicine and Pharmacy at the Brussels International Exhibition.

WE have received from MESSRS. THOMAS CHRISTY & Co., London, a specimen of "Glandulen," a product of bronchial glands prepared by Dr. Hofmann, of Meerane, Saxony, and said to be of use in cases of pulmonary tubercle.

SAMPLES have been forwarded us of the "Picnic Brand" Condensed Milk, full cream, prepared by the Condensed Milk Company of Holland Limited, Rotterdam.

New Books, etc., Received.

Ringworm and Alopecia Areata ; their Pathology, Diagnosis and Treatment. By H. ALDERSMITH, M.B., F.R.C.S., Medical Officer, Christ's Hospital, London. Fourth Edition, enlarged and illustrated. London : H. K. Lewis. 1897.

Hygiene and Public Health. By LOUIS C. PARKES, M.D., D.P.H. Fifth Edition, Illustrated. London : H. K. Lewis. 1897.

The Sanitary Inspectors' Handbook. By ALBERT TAYLOR. Second Edition, Illustrated, London : H. K. Lewis. 1897.

A Manual of Obstetric Practice for Students and Practitioners. By Prof. A. DUEHRSEN, M.D., late First Assistant in the Obstetric Clinic of the Charité Hospital, Berlin. Translated from the sixth edition by JOHN W. TAYLOR, F.R.C.S., Surgeon to the Women's Hospital, Birmingham ; and FRED. EDGE, M.D., F.R.C.S., Surgeon to the Women's Hospital, Wolverhampton. London : H. K. Lewis. 1897.

The Practitioners' Handbook of Treatment ; or the Principles of Therapeutics. By the late J. MILNER FOTHERGILL, M.D. Fourth Edition, in great part rewritten by WILLIAM MURRELL, M.D., Physician to the Westminster Hospital. London : Macmillan and Co. 1897.

John Hunter; Man of Science and Surgeon, By STEPHEN PAGET, with Introduction by SIR JAMES PAGET London: T. Fisher Unwin. 1897.

Perityphlitis and its Varieties. By FREDERICK TREVES, F.R.C.S., Surgeon to the London Hospital. Reprinted from Dr. Clifford Allbutt's "System of Medicine." London: Macmillan and Co. Limited. 1897.

Clinical Methods; a Guide to the Practical Study of Medicine. By ROBERT HURCHINSON, M.D., Demonstrator of Physiology, London Hospital; and HARRY RAINY, M.A., F.R.S.E., University Tutor in Clinical Medicine, Royal Infirmary, Edinburgh. Illustrated. London: Cassell and Co. Limited. 1897.

Spinal Caries, By NOBLE SMITH, F.R.C.S. Ed., Surgeon to the City Orthopædic Hospital, etc. Second Edition. London: Smith, Elder and Co. 1897.

A Manual of Hygiene for Students and Nurses. Illustrated. By JOHN GLAISHER, M.D., D.P.H. London: The Scientific Press Limited. 1897.

Fevers and Infectious Diseases, their Nursing and Practical Management. By WM. HARDING, M.D., Assistant Medical Officer, Berrywood Asylum, etc. London: The Scientific Press Limited. 1897.

The Oxygen Treatment for Wounds, Ulcers, Burns, Scalds, Lupus, etc. By GEORGE STOKES, M.R.C.P.I., etc., Physician to the London Throat Hospital. London: Baillière, Tindall and Cox. 1897.

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ORIGINAL COMMUNICATIONS.

INAUGURAL ADDRESS
ON
SOIL AND CIRCUMSTANCE IN THEIR CONTROL
OF PATHOGENIC ORGANISMS.

DELIVERED BEFORE THE MIDLAND MEDICAL SOCIETY
ON OCTOBER 22ND, 1897,

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PRINCIPAL MEDICAL OFFICER TO THE LOCAL GOVERNMENT BOARD.

Mr. President and Gentlemen,

It has long been matter of observation, amongst those who are accustomed to the investigation of causes of disease, that certain infectious diseases tend to recur periodically, after intervals more or less long, in the same localities—whether these be houses, villages, or towns—under circumstances that can hardly be explained except on the assumption that the specific infections with which these diseases are associated have in such localities contrived to retain their vitality during the intervals, and to maintain themselves outside the human body. These occurrences stand in striking contrast with other prevalences of the same diseases, often of equal virulence and extent, but which exhibit no tendency to recur ; and the question naturally arises how such difference in the behaviour of disease can be explained.

Similarly, there are individuals who, on a single exposure to an infection, do not fail at once to contract the disease in

question ; whilst, in contrast with these persons, we know of individuals who are subjected to maintained risk and exposure of precisely the same sort, and who seem from the very first to possess a natural immunity against some particular infection. To explain this by saying that in the one case there was a pre-disposition to the disease, and that in the other case the pre-disposition was lacking, is but to restate the fact and to leave the problem unsolved. Hence, here again, some explanation of the observed difference has to be sought. Since we have come to learn that the specific infectious diseases are caused by the reception into the system of definite micro-organisms, each of which has its own life history and physiological properties, and a number of which give evidence that their power of reproduction, their capacity for retaining certain definite characteristics, and even their ability to maintain their existence, are dependent on their surroundings, it has become important to ascertain how far this question of surroundings serves to explain differences of behaviour in diseases such as those to which I have referred.

The specific organisms of disease must be looked upon as subject to much the same laws as those to which the lower forms of plant life are subject. If they are under the influence of surroundings which supply all their wants, they may be expected to flourish and to multiply ; if some condition important to their well-being is lacking, they may be expected to suffer diminution or even loss of some notable property, and to be modified accordingly ; and if their surroundings are inimical in a higher sense of the term, they may be unable even to maintain their vitality. The question of environment thus comes to be one of primary importance, and in referring to the influence of soil and circumstance in their control of pathogenic organisms, I desire to include consideration of all the surroundings to which such organisms may come to be exposed, and to consider how diversity of soil and circumstance may tend to explain the different behaviour of infectious diseases as regards localities and individuals.

Permit me to be more precise in defining the position which I advance. In the decennium 1871-80, the County of Durham as a whole had a far higher rate of mortality from "fever"—mainly enteric fever—than that prevailing in any other part of England and Wales; and although a large and substantial diminution in this rate took place in that county, as it also did in England and Wales as a whole, during the decennium 1881-90, yet Durham continued to maintain her pre-eminence in regard to death from "fever." This position of unenviable notoriety still belongs to Durham County; indeed, since the expiration of the last decennium, the Registrar-General has drawn especial attention to the habitually recurring and undue prevalence of enteric fever in a tract of country including much of Durham and extending along the East side of Northern England. There are counties in proximity to Durham, in which, during the same twenty years, the "fever" death-rate has barely reached half that with which the Registration County of Durham has become identified. What are the characters of the soil—non-living or living—into which the pathogenic organism of enteric fever falls in many districts of Durham, which are lacking when the same disease occurs in neighbouring districts; what, in short, are the circumstances and surroundings which favour its life processes so much in the one instance and which are only about half as potent in districts near at hand?

So also, there are towns in different parts of England from which enteric fever is rarely absent, and in which it periodically recurs as a somewhat wide prevalence or even in epidemic form; whilst on the other hand there are towns and communities of equal size near by, where the conditions by which imported infection is surrounded, and where the soil into which the pathogenic organism is received, are inimical to its life processes and where it soon dies out. It is not that the organism itself differs at the outset. Cases are known in which infection from a town which suffers habitually from enteric fever but which—by reason perhaps of a wholesome water service—rarely suffers

in epidemic form, is imported into another where the disease is rarely known ; but gaining access to a public water-service, the result is a severe but an altogether transient epidemic. And once more, I have known a house standing in large grounds to be smitten with enteric fever on three different occasions ; the disease affecting in succession three different sets of tenants ; and although between the second and the third occurrence the dwelling had been untenanted for nearly two years, yet the disease re-appeared amongst the new tenants within a few weeks only of their occupation of the dwelling.

Soil, in its ordinary geological sense, has often been credited with having concern with persistence and recurrence of enteric fever, and since the discovery of the Eberth bacillus, additional importance has come to be attached to this view. That bacillus, like other pathogenic organisms, is distinctly affected by its surroundings. Light does not favour its life processes ; direct sunlight is distinctly inimical to it ; very high or low temperature affects its power of self-multiplication, especially when dryness is combined with the extremes of temperature ; and there are some grounds for believing that it is not ordinarily capable of resisting for any long period of time submergence in water. Judging by analogy it must also be assumed that it requires its proper nutriment in order to thrive and to multiply.

Under these circumstances we can easily realise that the question of the maintenance or the destruction of this pathogenic organism outside the human body may largely come to depend upon the condition of the soil on which the excretory matters containing it may find themselves. On the one hand a hard and somewhat impenetrable surface, exposed to sun and to a dry air, as well as a soil which contains but little organic matter, have often been assumed to be unfavourable to the extension of enteric fever ; whereas on the other hand, a loose and loamy soil which is organically polluted, and which at the same time permits the penetration of the organism and provides it with means of nourishment, and a sufficiency of moisture, has

been credited with the power of maintaining the vitality of the organism, of securing its multiplication, and of storing it up without its undergoing any material modification in its physiological properties, pending its entrance into the human subject as the result of its being washed into a well or being forced out of the soil into the surrounding air.

All this, however, had been a matter of surmise, and it is only recently that any systematic attempt has been made to study how far conditions of soil are concerned in enhancing or in controlling the operations and properties of the enteric fever bacillus. Under these circumstances I last year procured the sanction of the President of the Local Government Board to commence sustained investigation of this subject.

I was largely influenced in seeking this sanction by the consideration that in the Medical Department of the Local Government Board we had already procured valuable evidence in proof of the fact that the organism which in its life processes in peaty soil is the ultimate cause of lead poisoning which follows the consumption of certain moorland waters, is, in a high degree, dependent for its vitality and its power of harmfulness upon the condition of the soil from whence the waters in question are derived. Already some significant results have been obtained as the outcome of certain investigations which Dr. Sidney Martin has been carrying out for the Medical Department of the Local Government Board. These results will appear in detail in my official report for 1896-97, shortly to be issued, but in the meantime I may give a brief summary of that which has been already ascertained.

Dr. Sidney Martin made one set of experiments with soils containing a large quantity of organic matter, some of these being derived from localities where enteric fever was wont to recrudescence from time to time. Having placed samples of these soils in flasks, and having completely sterilised them, he inoculated them with one and another culture of the typhoid bacillus, and examination of soils thus treated at intervals varying from about a fortnight to fifteen weeks showed that the

bacilli had invariably retained their vitality; that in some cases the whole, and in others a part only, of the experimental soil had become pervaded by diffused growth of the bacilli; and that the extension of the growth bore relation to the temperature at which soil of this class was incubated, and also to the amount of moisture in the experimental soil. The important conclusion is, however, reached that under the conditions of a laboratory experiment soil such as that described affords, after complete sterilisation and at ordinary temperatures of the atmosphere, not only a medium in which the typhoid bacillus can retain its vitality, but one in which it is capable of multiplication and of spreading abroad. In the official report referred to Dr. Sidney Martin only records the results of his experiments up to the end of March last, when his experience in this matter was limited to 105 days, or 15 weeks; but his further investigations into this subject have already shown that, in a soil such as that referred to, the retention of vitality and the power of spreading abroad of the typhoid bacillus have been maintained, at varying temperatures, for periods of no less than 214 and 268 days—that is to say, some seven and nine months.

Dr. Martin next proceeded to make similar experiments with two soils of quite different sorts. One was a firm, crumbling, peaty soil, and the other a red sandy soil from beneath the peat, both being collected at a distance from human habitations. These so-called "virgin" soils were first sterilised and then they were inoculated with culture of the typhoid bacillus, in precisely the same way as had been practised with the organically polluted soils. Some samples were then incubated at the temperature which had been found in earlier experiments to be most favourable to the growth of the bacillus in soil, other samples being kept at the ordinary temperature of the laboratory. The result was in striking contrast with that of the experiments carried out with the organically contaminated soil. In all the previous testings the typhoid bacillus had retained its vitality from the first, and in most of them there had been spread of

the micro-organism from the centre of the soil, where the original inoculation had been made, to the periphery ; but with both sets of these virgin soils no signs whatever of vitality could be discovered as the result of testings 14, 20, and 23 days after the inoculations.

Thus far, these experiments have only been carried out under laboratory conditions ; they have had concern only with the vitality of the organism in its vegetative aspects ; they have been carried out with sterilised soils, that is to say, soils where the typhoid bacillus was free from the influence—whether favourable or inimical—of other micro-organisms in the soil, therefore they will have to be repeated on a wider scale and under circumstances more nearly resembling those met with in nature ; and they must take cognisance not only of the vegetative properties but also of the physiological and pathogenic properties of the organism. But, in the meantime, they are of marked value in connection with the question to which I am addressing myself, and they may serve to teach some useful lessons.

Speaking always with a due sense of the restrictions imposed by the artificial character and the limited number of the experiments thus far reported on, I may fairly maintain that we have reason for inferring that whilst one soil and set of circumstances are highly favourable to the vitality and propagation of the typhoid bacillus, another soil and set of circumstances are rapidly destructive to it ; and we seem to be upon the border of a territory where some vein of actual knowledge is likely to be discovered which will materially assist not only in solving the problem of the different behaviour of enteric fever as regards its persistence and recurrence in one and another dwelling, town, or district, but of further emphasising the value of that practice which has now so long been adopted in this country for the prevention of typhoid fever.

In order to give a practical aspect to this question, let me recall some of the circumstances of the soil and surroundings which we have learnt by experiment to be favourable to the

vitality and multiplication of the typhoid bacillus. They are that the soil should be pervious, that it should be permeated with a sufficiency of decaying—preferably animal—organic matters, that it should possess a certain amount of moisture, and that it should be subject to a certain temperature. And then, let us consider what means can be adopted to deprive the soil of one or more of these conditions which appear to favour the retention of the vitality and power of multiplication of the typhoid bacillus, and to prevent that organism from gaining access to the soil in the neighbourhood of human dwellings. To this end, I would in the first place advocate the paving of open spaces about dwellings where these open spaces are of small area and are liable to become contaminated with excreta. In this way fouling of, as well as penetration by a pathogenic micro-organism into, the underlying soil is practically prevented. Indeed, it is well known, not only that the paving of yards about small cottage and tenement property in towns has, in its results, been shown to be a public health measure of first importance ; but also that the value of such a measure has depended largely on the use of a form of pavement which really ensures impermeability. In the next place it will be clear that organic and decaying refuse should be so dealt with as to prevent its contaminating the soil in the neighbourhood either of dwellings or of sources of water supply. I need hardly indicate here in detail what are the points to aim at in securing this end ; but I may perhaps usefully approach the matter from the other point of view, and say that the midden-privy which still prevails in so many of our large Midland and Northern towns, presents every feature that should studiously be avoided. Gene rally sunk below the surface of the ground, often open to rainfall, always storing up decomposing excreta and refuse in close proximity to dwellings, it provides almost every condition favourable to the production of nuisance, to the saturation of soil with filth, and to the setting up and maintenance of those very conditions which seem to be essential to the vitality and multiplication of the typhoid bacillus. The fact that with our

present knowledge such a structure as the common midden-privy should not only still exist in our midst, but be clung to with a perverted tenacity, is, in my opinion, the greatest blot which attaches to English sanitary administration at the close of the 19th Century. Apart from its sanitary aspect, it is a system as degrading and ignoble as it is foul, and I trust the day is not far distant when we shall look back to it as a barbarism of the past. Firstly then, let our aim be to maintain such a condition of cleanliness about our houses, that the soil shall approach, as far as practicable, to the condition of those virgin soils which are inimical to the growth of the pathogenic organism under consideration.

The next point to hold in view is to deprive the soil, in the immediate proximity of dwellings and of wells, as far as this may be practicable, of those conditions of moisture and temperature which we begin to perceive may tend most to the multiplication of the enteric fever organism. We have as yet but little precise information on these points, but if we may judge by the very partial and as yet incomplete experiments made by Dr. Sidney Martin in this matter, we are led to the conclusion that a porous and organically contaminated soil to which moisture—in the form of distilled water—had been added to the extent of some 35 grammes per cent., and having a temperature of some 37° C. (98.6° F.), seemed best adapted to the growth and the spreading abroad of the typhoid bacillus. Any material modification in the amount of moisture, and above all any reduction of the temperature, down to that which may ordinarily be expected in soil, tended at once to retard and to check the growth of this bacillus. In so far, then, as we may be able to control conditions of temperature and moisture in the soil in the immediate neighbourhood of groups of dwellings, to that extent we may be able to acquire some control over recurrences of enteric fever. Here again I would give prominence to the systematic paving of house yards with an impervious material. Where open spaces about dwellings are large, and where organic pollution of surface soil is practically absent, we may rely, as inhibitive of this

bacillus, on the influence of sunlight and of alternating weather; but in our towns the conditions have become too artificial, and the open area about dwellings has become too restricted for us to hope that under the unnatural conditions which have been induced by urban aggregations of dwellings we have any right to expect the full benefit of Nature's remedies.

My reference to the question of soil-temperature leads me to make a few remarks on another disease which is periodically very prevalent in some of our large urban centres. I refer to epidemic summer diarrhoea, so fatal to infant life. There is strong presumption, since the late Dr. Edward Ballard's researches, that the question of "soil" is, in this disease, a most important factor, and that the essential cause of it is bound up with the life-processes of a micro-organism—not yet definitely differentiated—which exhibits its vital manifestations in the superficial layers of the earth. But here again the differing circumstances of the soil would seem to have a most important influence in determining whether the organism is to live and multiply, or whether it is to be deprived of its power for mischief. When it gains access to a soil that is sufficiently loose to be permeable to air and water, and which contains a sufficiency of that organic matter which prevails so largely about the densely-peopled areas of our large cities and towns, then the maintenance of its vegetative vitality is likely to be ensured; and when, in addition to this, it finds itself in the presence of a suitable temperature and moisture combined, then its power of rapid multiplication and its full pathogenic properties seem to be ensured. Dr. Ballard, as you are aware, has propounded the thesis that these requisites are pre-eminently present when the subsoil water stands sufficiently near the surface to maintain by capillary attraction a slight amount of dampness in the surface soil; and when the temperature of the earth at a depth of four feet reaches 56° Fahrenheit. Then it is, in his view, that the organism can undergo most rapid multiplication, and becoming air-borne, as the result of physical actions such as the rise and fall of subsoil water, it can gain access to food-supplies, and above all to the

milk which is so commonly stored for infants in miserable pantries opening out on to small confined areas and yard spaces where emanations from filth accumulations blend with those forced out from the soil itself. In this way the organism finds, according to Dr. Ballard, an appropriate medium for undergoing those life-processes which end in the production of a virulent chemical poison. Milk thus infected may be deemed to constitute a common vehicle for conveying to the infant this poison, the results of which are so terribly fatal in some of our large towns.

As consistent with the view that the influence of soil is a prime factor in this disease, I may say that there are instances of towns standing almost side by side which in density of population, in trade and occupation, in climate and other like conditions, exhibit no appreciable difference, and yet whilst one town is notorious for its ever-recurring autumnal diarrhoea mortality, the other stands out with equal prominence by reason of its maintained comparative freedom from this fatal diarrhoea. The circumstances of soil in one place are to be thought of as responding to the requirements of the micro-organism, in the other as failing to respond to them.

Let us again seek some practical application of the results of this research. First and foremost stands the need of a soil that shall be maintained as free as practicable from organic contamination, and in the narrow and restricted open spaces about our city dwellings this means such disposal of excreta as shall be free from nuisance, such means of storage of all domestic refuse in receptacles of limited capacity as shall prevent contamination of soil and air and shall necessitate frequent, even daily removal; and once more, it means the provision of an impervious paving for yards and courts so as to protect the soil not only from contamination, but also from exposure to that heat which, in combination with moisture, can serve as an incubating chamber for this virulent organism. There is a further practical application. It is this—Feed no infants artificially on milk that has not been quite recently

boiled. I say "boiled," because in the houses of the poor sterilisation, apart from boiling, cannot be expected. But I would add, there is no sterilising apparatus that can give results comparable with those provided by Nature in the healthy female breast, and I would venture further to maintain that no milk from the mammary gland of its mother ever caused the death of an infant from this specific summer diarrhoea.

Thus far, I have restricted my use of the word "soil" to its geological sense. But for the purposes of my subject it should be made to include all the circumstances and surroundings to which a pathogenic organism may be subjected, and in which it may find, or fail to find, the necessary conditions for retaining its vitality and for reproducing its kind. It was in this more general sense of the term "soil" that I referred at the commencement of my address to the question of individual predisposition to disease. As regards a number of specific infectious diseases, such, for example, as tuberculosis and diphtheria, we know that many people at the same ages and under similar external conditions, are either constantly, or at frequently recurring intervals, fully and so far as we can judge equally exposed to the pathogenic organisms with which these diseases are associated; and yet, whilst some succumb to them at once, others exhibit no susceptibility to them; this immunity extending at times over a long term of years or being even permanent. Such persons as the latter must obviously receive into them the specific organisms in like manner with their less fortunate fellows; indeed the organisms in question may be actually found in them on precisely the same mucous and other surfaces as those wherein they begin their career of mischief in the so-called susceptible persons; but in the so-called non-susceptible persons the microbes lack some one or more conditions necessary to their disease-producing function. This difference between impotency and virulence in the organism is doubtless very largely a question of surrounding circumstances; indeed it may be essentially one of the soil on to which it has fallen.

How many thousands of persons must have consumed tuber-

culous milk without ever having contracted tuberculosis ; whilst how many must be the infants who doubtless acquire tuberculosis through the same medium during the very earliest days of their lives. Or again, how common it is to find the bacillus diphtheriæ on the faucial mucous surfaces of nurses and other attendants in diphtheria wards, whilst these persons not only are, but remain quite free from disease ; whereas, on the other hand, how fatal to others is the reception of these bacilli under apparently similar circumstances. The question is, I believe, mainly a question of soil, in the widest sense of that term.

In the case of tuberculosis there are grounds for believing that when tubercle bacilli, carried aërially, impinge on the healthy mucous surfaces of the mouth and above all of the nares, they are not only largely arrested where they first impinge, but are also rendered impotent for harm by the physiological and chemical characters of the material with which they came into contact. Such as reach the stomach without such hindrances, whether swallowed with the saliva, or received in food, have to contend with the gastric juice which is probably sufficiently inimical to destroy or at least attenuate them if they are not excessive in number or of superabundant vitality. And again, it is highly probable that these organisms rarely make their way into the human system through the digestive tract, so long as that tract is covered with an unbroken, undamaged surface of normal mucous tissue. In short, the condition of health, in its widest sense, is inimical, in its refractory and resistant sense, to pathogenic organisms ; because the normal healthy tissues do not afford them the means of retaining their vitality and of facilitating the reproduction of their own kind. In this connection it is also important to remember that, in healthy tissues pathogenic organisms meet with vast numbers of cellular bodies which are normally present in them, that a struggle for existence then ensues, that the pathogenic bacilli are often devoured—by phagocytic action—by the normal phagocytes, leucocytes, etc., and that we largely

owe our safety from disease to such antagonistic action of our tissues. Some organs of the body appear to have this work as their primary function. Thus, the tonsils, standing as advance guards near the entrance of the respiratory and alimentary tract, must arrest many an organism that is carried to them aërially; and, as regards such a disease as diphtheria I feel convinced that the difference between contracting the malady and not contracting it, has largely to do with the condition of the surfaces of these organs. If the tonsils are uniformly healthy there is safety; if they are in an abnormal condition, as for example, abraded, congested, or inflamed, there is risk. But the amount and the vigour of the infective bacilli received have probably also to be taken into account; for even granting the presence on a healthy surface, and in a healthy gland, of micro-organisms and cells that contend with and are antagonistic to pathogenic organisms, the first set may be overwhelmed by reason of both quantity and quality in the invading organism. It is circumstances such as these that must be regarded as having a very direct bearing in determining predisposition to, or susceptibility to infection, on the one hand, and so-called immunity, or absence of predisposition to infection, on the other hand; the two sets of individuals equally exposed to infection being apparently subject to the same risk. It is, in short, a mere matter of soil and circumstance.

My reference to diphtheria leads me to refer to two matters which have a direct bearing on the subject before us. I have been credited with the assertion that faulty sanitary circumstances have no place in the production of diphtheria. I am not aware when or where any such assertion was ever made by me, but I am free to admit that I do hold the opinion that diphtheria is not caused by sanitary circumstances, however faulty they may be, apart from the reception on to the fauces or other susceptible surface of the diphtheria bacillus; and I have a profound conviction that, subject to the limitations just indicated, the diphtheria bacillus does not retain its specific properties or undergo in its life processes the changes necessary to

the production of a specific toxin when it falls on a sound or healthy surface. On the other hand, I have expressed a very definite opinion to the effect that whatever produces an abnormal and unhealthy surface of the tonsils or other parts of the naso-pharyngeal tract, tends directly to provide a soil which favours the retention, and perhaps the acquisition, by the diphtheria bacillus of those properties by which it produces disease and death in man ; and I have, by way of illustration, specified two forms of throat ailment which, more than any others, perhaps, favour an enhanced virulence and power of multiplication in the diphtheria organism, namely, that form of throat which so often follows inhalation of an organically contaminated air—vulgarly known as a “drain-throat”—and that condition of the fauces and nares which is so constantly found in scarlatina convalescents, and which is regarded as a part of that disease. Allow me to quote a few words from my published Milroy Lectures* on this subject :—

“I am inclined very largely to limit the operation of faulty sanitary circumstances to the production of a morbid state of the fauces, which induces a local condition favourable to the reception of the specific organism of diphtheria.” And referring to a particular prevalence of diphtheria in a Midland town, I went on to say that given “That form of sore throat often identified with drain effluvia . . . it needed but a resuscitation of the diphtheria infection in order to the specific inoculation of such throats. In short, I am inclined to regard the influence of a sewage polluted air as operating in much the same way as the scarlet fever poison, in so far as predisposition to diphtheria is concerned.” The matter thus becomes one of soil, these two conditions of throat bringing about a localised set of circumstances which are favourable to the reception, to the vitality, and to the various life processes of the bacillus diphtheriæ.

* Diphtheria, its Natural History and Prevention, being the Milroy Lectures, 1891, pp. 89-90.

The other point to which I would advert is that, apart from the immediate production of a disease as the result of the impact and lodgment of pathogenic organisms, the essential functional characteristics of those organisms are liable to be affected according to the circumstances in which they find themselves when they have fallen on one or other soil. A property—say the virulence—of the organism, may entirely depend on the question of soil and circumstance; in the one case the specific virulence may be enhanced, in the other it may be attenuated or even destroyed. The result that is to ensue must depend on a multitude of circumstances. Concerning many of these we, as yet, understand but little, concerning many more we are in almost complete ignorance. But we already know that one set of—say pathogenic—organisms coming into conflict with another set of organisms, find that their quality of virulence and power of multiplication are favoured and increased; whereas another set from the same source, but reaching another soil, may find themselves in conflict with other organisms that tend to their destruction; the two being mutually inhibitive. I have long maintained that the virulence and even the specific quality of an organism may be a matter of progressive development according to soil and surroundings, and some twenty years ago I compared the process of the evolution of the property of infectiveness to those processes by which definite properties in plant life, such as colour and perfume, can be produced and can be modified or allowed to lapse in the hands of skilled horticulturists, or in nature according to the surroundings to which the living matter in question is exposed; “the affair being,” as I then said, “essentially one of soil.” At one time this view met with but little, if any, encouragement from certain teachers and students of bacteriology. They inclined to the view that the specific qualities of pathogenic organisms were stable and not subject to modification. But much in the epidemiological behaviour of different infections has tended to a quite different conclusion. In 1883, my colleague, Mr. W. H. Power, F.R.S., laid down certain propositions with regard to

the cholera microbe ; propositions which fell on many an un-receptive ear. He maintained that the cholera organism "has phases in its life-history, during some of which it has not, and in others it has, the power of producing cholera"; and he further expressed the view that when once this exotic organism is no longer liable to the conditions—local or climatic for example—which in its home were wont to favour the retention or enhancement of its "malignant phase," the general tendency of the organism was towards its non-malignant phase.

At the present moment we seem to be on the high road to an absolute confirmation of these views. Koch's cholera vibrio can be found in abundance in a state in which, morphologically and in most other respects, it is indistinguishable from that which is in direct causal relation to cholera ; and yet the organism is impotent to produce that disease. Dr. Cautley, experimenting with the typhoid bacillus, finds that its power of survival in milk is dependent to some extent on the number of organisms normally to be found in milk. Thus, in cold weather, when the micro-organisms commonly present in milk are least abundant, the typhoid bacillus survives longer than in warm weather. Here we have another indication of the manner in which a pathogenic organism is influenced according to the qualities of the soil and environment in which it finds itself ; and incidentally we may have some explanation of the seasonal behaviour of enteric fever, a disease which is more prevalent in autumn and winter than in the summer.

I referred just now to the antagonism existing between tissue cells and pathogenic organisms. Study of this question has also included that of the influence which micro-organisms of different characters exert upon each other when they come into competition. To a large extent the investigations made have been concerned with pathogenic organisms, and some valuable results have been obtained. Thus, Dr. Klein showed some six years ago that whilst with cultures of either the malignant oedema bacillus or of the bacillus of Grouse disease fatal results were invariably obtained on the inoculation of mice with each

separate infection, yet when cultures of these microbes were mingled together and the mixture was injected into mice, very few of them suffered any illness at all. Here we seem to have mutual inhibition between two sets of organisms, the contrary action of one and the other being brought about by the circumstances under which the one or the other set, or both sets of organisms found themselves placed on injection into the body of the mice ; the result being determined by the nature of the circumstances and surroundings to which the organisms were severally exposed. In other instances we know that a condition of antagonism is brought about when the inoculation of an animal with a specific and commonly fatal infection, follows its inoculation by an antecedent infection. In this latter case it seems clear that the first inoculation has so modified the otherwise receptive soil into which the second infection is received, as to modify or even destroy its virulence. On the other hand, there are instances in which toxic bacteria or their products used in advance for inoculation purposes make the soil—in this case the body injected—more receptive than it otherwise would be of a second specific infection. The inability to produce disease which different specific micro-organisms often experience when they are received into the human body may well be believed to be in part due to the presence therein and the antagonistic action of other organisms which are associated with the condition we call health ; whereas, on the other hand, organisms which are either associated with conditions of unhealthiness, or are themselves the cause of a condition of ill-health, may well be believed to have at times the power of enhancing and of adding to the virulence of specific organisms which come into competition with them. In this way immunity, special susceptibility, and predisposition come to be, in each case, essentially an affair of the soil and circumstances in which one and another specific organism finds itself placed. If we limit the term soil to its geological sense, the same holds good. The natural soil teems with micro-organic life ; one thimbleful of ordinary garden soil, which has

periodically received a manurial dressing, will contain from one to three million micro-organisms, and a soil which has long been free from any artificial process of manuring still abounds in micro-organic life. These organisms, in their life processes, tend to the modification, and often to the destruction, of extraneous organic matter. Experience shows how often micro-organisms, endowed with mischievous qualities, lose the power for harm on reaching certain soils. But the normal and harmless micro-organic constituents of soil may be overcome by the abundance of extraneous organisms, such as those having pathogenic properties, and which on occasion find their way into the soil, and then the latter may not only secure for themselves a medium for their reproduction and periodic activity, but their mischievous qualities may even be enhanced.

It may possibly be thought that in the remarks which I have addressed to you I have dealt too exclusively with considerations bearing upon the duties of those who concern themselves with matters affecting public rather than personal health. I trust this is not so. Whether we limit the use of the term "soil" to its geological sense, or whether we make it include every "circumstance" affecting man and his surroundings through which pathogenic organisms are wont to reach the human body, I know no influence that can better be exercised for good with respect to the protection of the individual and the home than the wise counsel of the habitual medical adviser. He, above all others, is free from the suspicion of advising merely on some general principles, and for the benefit of the community at large, rather than for that of the individual. The guidance of those whose counsel is sought and trusted at times of sickness, is that which will best ensure for households and individuals that when the struggle with specific infection comes it shall be successfully met. And this can only be when there shall be ready in advance that condition of healthiness, in its widest application, which would appear to be antagonistic to pathogenic organisms and inimical to those life-processes which conduce to the production of their toxic poisons.

THE MEDICAL WORLD IN 1779.
AN ADDRESS DELIVERED AT THE ANNUAL MEETING IN WALSALL,
ON OCTOBER 28TH, 1897.

BY G. A. PHILLIPS. M.R.C.S.,
PRESIDENT OF THE STAFFORDSHIRE BRANCH OF THE BRITISH
MEDICAL ASSOCIATION.

Gentlemen,

It is my very agreeable duty this afternoon to bid you, in the name of the medical men of Walsall, a very hearty welcome to our town, a town which is making such rapid growth, both in size and importance, that from standing second on the list in Staffordshire, bids fair to rival and even surpass its neighbour—Wolverhampton.

My next duty is to thank you most sincerely for the great honour you have conferred upon me by electing me to the Presidential chair. I accept it more as an honour to the town I represent than as due to any personal merit of my own. I can only assure you, that relying upon the kind forbearance of my friends, and the willing help of my colleagues in office, I shall endeavour to fulfil the duties of my office in such a manner as to justify your kindness in placing me in this position.

Some few years ago chance threw in my way the first Medical Directory published in England. It was compiled for and published by John Murray in the year 1779. It is a modest little volume, a midget in comparison with the Medical Directory of to-day; but it contains a vast amount of information, a great deal of which I think will prove interesting and even somewhat instructive to us to-day. During these last few months every presidential address has been on the subject of the progress in this or that science made during our Queen's long reign, so I do not wish to weary you with any such *résumé* this afternoon, but rather to give a little sketch, if I can, of what was going on in

the medical world at the time this Directory was published, and to bring before you as graphically as I can the thoughts and doings of our medical ancestors at that period.

Man is a gregarious animal ; in the earliest days we find him forming guilds and instituting societies, or later, congregating at coffee houses. The Medical Society of London was founded in the year 1773, and a painting of the founders hangs on the walls of its home, in Chandos Street, Cavendish Square. To show how easy it is to carry our minds back to this period I might mention that the painter of this picture (Samuel Medley) lived as far into this century as 1857, dying at the ripe age of eighty-nine. He was the grandfather of Sir Henry Thompson, the celebrated lithotomist. The Middlesex Hospital Medical School Society was founded in 1774. The Humane Society was instituted in 1774. In the instruction given for restoring the apparently drowned, the first was by the application of warmth, either by wrapping the patient in the skin of a freshly-killed sheep, or by applying a warming pan up and down the back ! Next, by forcibly breathing into his mouth whilst the nostrils were closed, and then pressing on the chest to expel the air again. At Colchester also the Editor of the Directory notes :—" In our medical tour through the several counties it gives us real pleasure to notice any institutions that bid fair, not only to improve and extend the knowledge of medicine, and to diffuse a useful spirit of inquiry, but likewise to promote a state of harmony amongst medical practitioners, which we have observed, and which a worthy correspondent at Colchester joins with us in lamenting, is but too frequently interrupted in country towns. We are therefore happy to inform our readers that with these laudable views a Medical Society was established in Colchester in 1774, which, from consisting at first of seven members only, has gradually increased to nineteen, several of whom are resident in different towns of Essex and Suffolk." The Editor goes on to regret that it does not include all the names of the practitioners at Colchester.

Another little scientific club used to meet at a grocer's house

in the Strand, each member paying sixpence a night for the use of the room, and the only refreshment the members were allowed to take at the place of meeting was a glass of water! The principal members were Sir John Pringle, Sir George Baker (both physicians to the King), Heberden, William Watson, Turton, and Lord C. Cavendish, who officiated as President.

Then men met at the coffee houses. The leading physicians each had his own coffee house, whither apothecaries went to consult with him about their patients, paying him a fee of half-a-guinea for a prescription, which was written without the physician seeing the patient. Others have described more ably than I can profess to do, the meetings at these coffee houses, where Dr. Johnson, Boswell, Sir Joshua Reynolds, and other intellectual giants (all of whom were living at the period I am speaking of) met. David Garrick had died in the January of that year (1779), whilst Oliver Goldsmith had predeceased him some five years. Another literary celebrity, who was also a medical man, was Dr. Wolcot, better known as "Peter Pindar." Crabbe, the poet, also began life as a medical man; he was apprenticed to a country doctor in his fourteenth year, in 1768, and it throws some light on the state of the profession in the provinces when we learn that the apprentice shared the bed of the stable boy! Crabbe, when his apprenticeship was finished, had not sufficient money to enable him to study at the London Hospitals, he therefore opened an apothecary's shop in his native town, and after struggling with poverty for some time he finally abandoned medicine and went to London. After many trials and hardships he was taken in hand by Burke, and then was ordained, becoming chaplain to the Duke of Rutland; he afterwards obtained preferment, and lived to an old age in comfort.

Truly History repeats itself, and proves that there is nothing new under the sun. In one place I read that Dr. Heberden, an ex-President of the Royal College of Physicians, wrote "An account of the remarkable good effects of Common Salt in an Extraordinary case of Worms." In the *B. M. Journal* about

two years ago a writer called attention to the fact that some nice shrubs he had planted suffered very much, and finally died, from the frequent irrigations bestowed upon them by his dog, and suggested that as chloride of sodium was probably the active agent which wrought the destruction, we might try the effects of common salt on animal parasites and on fungoid growths; and a Dr. Murphy, of Dover, published in the *B. M. Journal* of the 25th of last month a series of such cases cured by this agent. Again I find a Dr. Dickson wrote three papers on the use of blisters applied to the sacrum in the cure of incontinence of urine. A writer last year suggested a blister as an infallible remedy, when applied to the nape of the neck!

A Dr. Simons wrote "An account of the Tænia, and Method of Treating it." Dr. Simmons gives the natural history of the Tænia, and then describes a quack remedy used by a Madame Nouffer, who was famous for her successful treatment of tape worms, and who sold her remedy to King Louis XVI of France, for 18,000 francs. The specific consisted solely of two or three drams of the male fern in powder, which was taken fasting. Dr. Simmons remarks that the virtues of fern root in cases of tænia, though mentioned by almost all the ancient writers, have been long neglected. Dr. Fothergill, a Quaker, who is said to have made £7,000 a year, wrote many papers on consumption, advocating the use of balsams, a distinct anticipation of the antiseptic treatment of phthisis; another paper "On the use of Tapping early in dropsy." A Dr. Saunders, F.R.S., and a physician to the Army, writes, "An Account of the Effects of freely admitting Cold Air, in a case of Confluent Smallpox," and a Dr. Glass also writes on "The Use of Cold Air and Cold Water in the Treatment of Putrid Fevers." It is only of late years, since the Crimean War, that we have again returned to the path pointed out by these writers.

Another curious fact recently noticed is that patients suffering from smallpox, when treated in a room to which only red-coloured light is admitted, do not become pitted or marked. In the middle ages it was the rule when possible to treat patients

suffering from any of the exanthemata in red rooms, with red bedhangings and with red drinks. Edward II.'s physician, John of Gaddesden, informs us—"When the son of the renowned King of England lay sick of the smallpox, I took care that everything round the bed should be of a red colour, which succeeded so completely that the Prince was restored to perfect health without a vestige of a pustule remaining."

Many pamphlets were published at this date on the subject of inoculation for smallpox, Dr. Lettsom and Baron Dimsdale being the principal advocates. Baron Dimsdale went to Russia in the year 1768 to inoculate the Empress and her son, for which he received a fee of £12,000, a pension of £500 a year for life, and the rank of a Baron of the Empire. A fee worth picking up!

Under the heading of Chester the writer of the Directory says that "he has pleasure in informing the public that a Society for promoting Inoculation for the prevention of Fatality of the Smallpox has been lately formed in the city of Chester, and we are assured that the regulations of this Society have prevented the disease from spreading in four different parts of the town. The Inspector of the Society is authorised to give a reward to the person who first informs him that a fresh family is infected." *The Notification of Infectious Diseases Act* was thus anticipated by more than 120 years.

The treatment of venereal disease was a subject on which numbers of men were writing. One of the most interesting papers I might mention is by Dr. Andrew Duncan, of Edinburgh, entitled—"Medical Cases from the Medical Dispensary at Edinburgh, with Remarks and Observations, being the Substance of Case Lectures delivered during the years 1776-1777." In one of these lectures, on a case of venereal gonorrhœa, he brings many arguments to prove that gonorrhœa and syphilis are not merely different modifications of the same disease, but two different affections. He also mentions a case of epilepsy cured by cuprum ammoniacum. Another author, Dr. Leslie, of Durham, writes "A History of a Convulsive Disorder Treated by Flowers of Zinc."

Sir John Pringle, a physician extraordinary to the King, published a series of "Experiments upon Septic and Antiseptic Substances, with Remarks Relating to their Use in the Theory of Medicine," for which he received the prize medal of the Royal Society. A Dr. Milman, a physician to the Middlesex Hospital, wrote "An Account of Two Instances of the True Scurvy, seemingly Occasioned by the Want of Due Nourishment."

A Dr. Goodman issues "A Remonstrance against the Mischievous Abuse of Phlebotomy." Sir Richard Steele—Dick Steele—tells of a phlebotomist who advertised "for the good of mankind" to bleed at "threepence a head." Trade competition was very keen even in those days, for in the *Stamford Mercury* of March 28th, 1716, we find the following advertisement:—"Whereas the majority of apothecaries in Boston have agreed to pull down the price of bleeding to sixpence, let these certify that Mr. Clarke, Apothecary, will bleed anybody at his shop *gratis*."

A French journal relates the story of a woman, aged twenty-four, the wife of a soldier, who, between the dates of September 6th, 1726, and the first of December, 1729, was bled twenty-six thousand two hundred and thirty times! This probably was one of the "big gooseberries" of the slack season. Well might Dr. Goodman protest against *excessive* bleeding!

Attention has recently been called to the danger of too strictly dieting patients, and Dr. Totherick has lately read a paper on the subject, maintaining that we may probably do away with the natural functions of an organ if we do not call upon it to perform the whole of its regular duties. Sir Richard Jebb, a physician to the King, also held that the stomach was made to be used and not to be nursed. A lady on one occasion asked him what she might eat; he replied, "boiled turnips." "Boiled turnips! you know, Sir Richard, that I told you I cannot bear boiled turnips." "Then, madam," answered Sir Richard, "you must have a d—d vitiated appetite." To another, who asked him what he might eat, he replied, "My directions, sir, are simple; you must not eat the poker, shovel, or tongs, for they are hard of digestion; nor the bellows; but anything else you please."

A Dr. Falconer writes a little work entitled "Observations on some of the Articles of Diet and Regimen usually recommended to Valetudinarians." He censures the substitution of brandy and rum and water for drink instead of malt liquors, and likewise objects to a strict prohibition from vegetables, bread and butter, and sugar, as being pernicious when long continued.

Speaking of diet in sickness reminds me of the heroic quantities which used to be given to patients. A story is told of a celebrated Abbé who was ordered by his physician to drink a quart of ptisan every hour. The doctor was much enraged at his next visit to find that his orders had not been carried out, and frankly said so. "Ah, my friend," pleaded the Abbé, "how could you desire me to swallow a quart an hour? I hold but a pint!" Not many years previous to the period under review Pulteney, afterwards Earl of Bath, was taken ill at Lord Chetwynd's house at Ingestre, with a pleuritic fever. It is said that Dr. Hope, Dr. Swynsen, and other physicians from Stafford, Lichfield, and Derby, were called in, and carried off 250 guineas, leaving the malady just where they found it. Dr. Freind went down post from London and received 300 guineas for the journey. Dr. Broxholm went from Oxford, and received 200 guineas. They prescribed some few medicines, but without the least effect. The patient was still alive, and was heard to mutter, "small beer, small beer." They said, "give him small beer, or anything." Accordingly a great silver cup was brought, which held two quarts of small beer; they ordered an orange to be squeezed into it, and then gave it to him. Pulteney drank off the whole at a draught, and demanded another. Another cupful was administered to him, and soon after that he fell into a profuse perspiration and a profound slumber for nearly twenty-four hours. His recovery from then was uninterrupted.

I have before mentioned Dr. Heberden. I notice another paper by him on an epidemic of Influenza, entitled, "An account of the Epidemical Cold in June and July, 1767;" "Remarks on the Pump Water of London," and two papers on

Angina Pectoris. Sir George Baker and several other men wrote papers on Lead Colic, so common in Devonshire, ascribing it to the action of cider on the glazed vessels used by the lower classes.

Perhaps one of the most noted physicians whose name I find in this Directory is that of the Quaker, Dr. John Coakley Lettsom, who said of himself:—

“ When patients sick to me apply
I physics, bleeds, and sweats 'em ;
Then—if they choose to die
What's that to me—I letts 'em.”

His practice was so enormous that he is said to have knocked up three pairs of horses a day, and his income was stated to be £12,000 a year. Johnson's biographer, Boswell, was a constant visitor at his house. Lettsom was a man of very refined tastes, fond of literature and art, and was a frequent contributor to the *Gentleman's Magazine*; one of the best known of his contributions being, “A History of some of the Effects of Hard Drinking.” It concludes with a scale of Temperance and Intemperance, in imitation of a thermometer:—

<i>Scale of Temperance.</i>		<i>Scale of Intemperance.</i>	
70°	Water.	70°	Aniseed, Brandy, taken night and morning. Rum.
60°	Milk and Water.	60°	
50°	Small Beer.	50°	Whisky, taken in the morning. Bitters infused in Spirits.
40°	Cyder and Perry.	40°	
30°	Wine.	30°	Usquebaugh, Hysteric Water.
20°	Porter.	20°	Flip and Shrub.
10°	Strong Beer.	10°	Grog and Brandy and Water.
			Toddy and Crank.
			Punch.

It is very difficult in running through a work like this to know what to select and what to omit; but, as illustrating the various subjects written upon I might mention a few more pamphlets. One author writes an essay entitled “An Attempt to Restore the Primitive Natural Constitution of Mankind,” a somewhat large order, as we should say now-a-days. Of course we have a treatise on Bath and the use of the Bath waters; they appear to be perennial, and go on from age to age.

Dr. Pye Chavasse may have taken his idea of giving advice to

young mothers from a work mentioned in this Directory, by a Dr. Hugh Smith, entitled, "Letters to Married Women;" but which side of the question he took, how they might succeed in pleasing their lords like the Earwigs, or how they might prevent such disasters, I know not. Another gentleman, Dr. Percival, F.R.S., throws his sympathies in with the other sex, and delivers himself of a work which up to 1778 had already run through four editions, entitled, "A Father's Instructions; consisting of tales, fables and reflections designed to promote the love of virtue, a taste for knowledge, and an early acquaintance with the works of nature." One author unburdens himself by publishing a book, "Infancy, or the Management of Children, a didactic poem in three books"!

Amongst the names of surgeons then living the greatest name of all is that of the celebrated John Hunter, and mention is made of a work published by him during the year, "A Practical Treatise on Diseases of the Teeth." It is stated that there are no quotations in this book, no authors cited; the work is entirely original. In it he tells us that decay of the teeth arises not from external causes, but from disease originating in the tooth itself, and advocates the extraction of the tooth, boiling it to destroy its life, and replacing it in its socket. He also advocates the transplantation of teeth. The tooth to be transplanted, he says, must be young, fully grown, and smaller than the tooth removed. He also notices the uselessness of the operation in those who are taking mercury. I also find notices of many other papers by him. How he hated leaving his scientific work to go out to see patients, remarking on one occasion, "I suppose I must go and earn this d—d guinea, or I shall be sure to want it to-morrow." On another occasion he returned home and found his house full of company. Going into the drawing room he said, "I knew nothing of this kick up, and I ought to have been informed of it beforehand; but, as I have now returned home to study, I hope the present company will retire." It is needless to say the room was speedily emptied. Hunter's wife was a very intellectual woman and wrote poetry; the title of a

ballad of hers, "My mother bids me bind my hair," is probably familiar to us all. A writer in the *E. M. Journal* this summer (1897) relates the history of an accident in which a patient had a sound tooth knocked out, and which, after lying upon the kitchen sink for six hours, was washed and replaced and became quite firm. He probably had never heard of John Hunter!

The name of John Hunter's elder brother William also appears, with a goodly list of pamphlets and works attached. Percival Pott, too, who wrote on "Fractures and Dislocations," "An Account of Tumours which soften bones," and other subjects too numerous to mention. Percival Pott and Dr. William Hunter were the first lecturers on Anatomy at the College of Surgeons after the separation of the Surgeons from the Barbers; and John Hunter, after studying anatomy under Cheselden, prepared the anatomical subjects for his brother's lectures. We also recognise a well-known name in Hey, of Leeds, who gave lectures at the Leeds Infirmary. Another book I notice is "An Enquiry into the merit of the operation used in obstinate Suppression of Urine," by a Mr. Alexander Reid, of Chelsea; in this work the author warmly advocates tapping the bladder through the rectum, and mentions that it was first recommended by a M. Fleurant, a surgeon at Lyons.

A Staffordshire man, Mr. Finney, of Leek, wrote an account of a case of relapsing appendicitis, though he did not give it that name. The case was that of a girl who had been subject to frequent and excruciating fits of colic, from the age of five to twenty-one years, when Mr. Finney first saw her. The case ended in an abscess forming, which broke and discharged a large quantity of pus. Then a second abscess formed, and when that broke a hard substance was found, which proved to be the smaller end of a part of a silk winder, at which machine the patient had worked before she was five years of age. The extraction of this substance was followed by portions of hard excrement and some dark brown particles, which proved to be filings of iron the patient had formerly taken. She recovered with a faecal fistula, which six months later was gradually con-

tracting. Another Staffordshire man, at Newcastle-under-Lyme, writes "An account of a woman enjoying the use of her right arm after the head of the os humeri was cut away."

As illustrating the treatment of any intestinal obstruction I will mention another paper on "A Case of Stricture of the Rectum," which we are told terminated fatally, the stricture closing the passage as if it had been tied with a packthread. The unfortunate patient had taken three pounds of quicksilver ten days before his death, yet none of it had descended to the part affected! A great discussion was going on at this period as to the relative merits of Cæsarian section and division of the symphysis pubis as a substitute. About the year 1768 division of the symphysis pubis was proposed to the French Academy of Surgery. The Academy considered this as an extraordinary project rather than a practical operation, but a Dr. Camper, of Groningen, was of a different opinion. He operated successfully upon a living pig, and then made some attempts to procure a trial of the method upon a young woman condemned to death at Groningen, but was unable to succeed in his request. In 1776 a Dr. Ligault operated upon a deformed woman, with a narrow pelvis not exceeding two and a half inches in diameter from the pubis to sacrum. The operation was performed with a common bistoury, and the space gained was two and a half inches, and a living child extracted without any considerable difficulty. On December 3rd, 1777, the woman was so well recovered that she presented herself to the members of the Faculty assembled in their hall, carrying her young son in her arms, and walking alone up a staircase of some twenty steps. It is related that the child was received by all the gentlemen present "as a child whose birth made him precious to the Faculty." A medal was struck to commemorate the event. But a very sensible and humane surgeon at Paris wrote word to the Editor of this Directory some time after the Faculty had passed their decree, that "the woman was still living, but is in a most deplorable condition."

Other surgical papers I note. Charles White, of Manchester,

described a case of removal of the head of the humerus with movement afterwards. A surgeon to the Westminster Dispensary records a case of an extraneous body cut out from the joint of the knee ; another writes on an amputation above the ankle with a flap ; but I should weary you if I went on enumerating. I have mentioned sufficient to prove that the art and science of surgery was not standing still.

A foreign writer gives an account of the magnetic cures performed at Vienna, and explains that the person who thus imposes upon the credulity of the public is a Dr. Mesmer. This pamphlet likewise contains "The Eulogy of Dr. Meckel, a late celebrated Professor of Anatomy at Berlin."

It was not only abroad that quacks like Mesmer were imposing upon the credulity of people. Here, in London, at this time were several notorious charlatans, the most celebrated being a person named Graham, who furnished "A Temple of Health" in the most gorgeous manner, and charged the public two guineas a-piece for attending his "Lectures on Health." He was assisted in these lectures by a woman, with a beautiful figure, whom he called "the Goddess of Health;" and it is stated that Emma, who became the wife of Sir William Hamilton and the favourite of Nelson, acted for some time in this capacity. He also provided a "Celestial Bed," as he called it, standing on glass legs, and decorated with the richest hangings ; married people who had no children might have heirs by sleeping in this bed, for the use of which he demanded one hundred pounds a night. The public were so eager to rush after any well-puffed remedy, and were so credulous, that as the imposture of one quack was exposed they immediately took up with another. One vaunted the healing powers of Tar Water ; another cured by looking upon the patient and touching him ; another announced that he could cure cataracts "because he had lost an eye in the King's service;" another successfully treated ruptured children, because "his father and grandfather were born bursten." A celebrated Dr. Katterfelto travelled about the country in a large caravan, containing a number of black cats. The cele-

brated Joanna Stephens but a few years before had demanded £5,000 for her infallible remedy for stone and gravel. The public, including several bishops and many peers, subscribed over £1,300; but Joanna stood out for the whole sum, and Parliament voted the remainder, after a certificate had been signed as to the efficacy of the remedies. The signatures to this certificate include those of the Archbishop of Canterbury, the Bishops of Gloucester and Oxford, several judges and peers, and of Cheselden, Cæsar Hawkins, and Sharp. There was some excuse, however, for the public faith in nostrums when men like Sir Hans Sloane sold an eye salve, and Dr. Mead a remedy for the bite of a mad dog.

Hydrophobia was evidently very common, and I find, in the "Philosophical Transactions," three cases reported by Dr. Mead. In one of these cases the patient was persuaded to eat the liver of the mad dog, after it had been fried. The other two patients fortunately escaped so gruesome a remedy, as the symptoms of hydrophobia did not appear until some considerable time after they had been bitten.

Before leaving the subject of quackery I cannot refrain from quoting an extract from the *Whitehaven Gazette* of September 30th of the present year, 1897:—"There has been much talk lately about the wonderful cure effected to a Carlisle lady by the use of the water at St. Winifred's Well, at Holywell. . . . After all is said and done, I don't see anything very miraculous in the cure. We all know how ignorant medical men are as a rule in connection with broken bones or dislocated joints. Even in Whitehaven cures have been effected in less than an hour of ailments that medical men have given up in despair. Mr. Wilson, the bone-setter, of Aspatria, who attends the various market towns of the county once a week, has effected greater cures than this at Holywell, and no one attaches any extraordinary virtue to his treatment. He simply understands what he is about, and puts his knowledge into practice."

Bone-setters have existed in all ages. The most celebrated one in the middle of the last century was a Mrs. Mapp, who was

paid £100 a year by the town of Epsom so long as she resided there. She drove to London in a carriage with four horses and with outriders in livery.

During the previous nine or ten years dispensaries had been rapidly springing up in different parts of London, and it will not surprise us to learn that a "battle of the clubs" was fought in consequence, the apothecaries being up in arms against those physicians who started dispensaries in order to advertise themselves. The physicians merely prescribed for the patients, who loudly complained of the prices they had to pay the apothecaries for dispensing the medicines. (All the dispensing was done by the apothecaries, there were not half a dozen druggists in the whole of London) No fewer than four of such institutions were started in 1778. Mention is made of St. Luke's Hospital for the reception of lunatics, and a note adds, "that patients are admitted free of expense, and that the Governors, as is the case now at Bethlehem Hospital, have very humanely ordered that no patient shall be exposed to public view." Previous to this lunatics had been described as "a displeasure to God and an annoyance to the King's subjects." They were chained together, and lay upon straw, and the public were admitted to see them at a charge of twopence each.

Hospitals were rapidly springing up all over the country, Winchester being the first built out of London. Durham and Northumberland had one hospital between them at Newcastle. Warwickshire had a hospital at Birmingham, but a note states that "a building intended for an infirmary was erected at Birmingham several years ago, on a magnificent plan, and by private benefactions: the intended institution not having been sufficiently encouraged it has not as yet been fitted up for the reception of patients. We are informed, however, that several public spirited gentlemen are at present exerting their endeavours to get it completed, so that there is a probability of its being soon filled with patients."

Dr. Ash was the leading physician at Birmingham, and it was through his influence that the hospital was opened for the recep-

tion of 40 patients, although there was accommodation for 100, during this year 1779. A portrait of Dr. Ash, painted by Sir Joshua Reynolds, hangs in the board room of the present hospital. I also notice the names of Mr. John Freer, senior, and Mr. John Freer, junior, practising in Birmingham; they were respectively the great great grandfather and great great uncle of the present Mr. Luke Freer. The total number of names given as resident in Birmingham is three physicians, six surgeons, twelve surgeons and apothecaries, and two apothecaries.

In our own county of Stafford the Infirmary had been erected a few years; it contained about a hundred beds, and was attended gratis by one physician, but the two surgeons received an annual salary of £30 each. At Stafford there were three physicians in practice, Drs. Campbell, Underhill, and Fowler, and five surgeons and apothecaries.

At Barton was a Mr. Moses Birch, who had been a surgeon in a horse regiment up to 1769, when he went to settle at Barton, hearing from his brother, Mr. Simeon Birch (who was in practice at Burton-on-Trent) that there was an opening there. A grandson of this Mr. Moses Birch is still living at Lichfield, a hale old gentleman, upwards of eighty, and to whom I am indebted for these particulars. Two generations only taking us back 120 years.

Under Lichfield I find the name of Erasmus Darwin, "who had graduated twenty years previously, and in his thesis defended the doctrine that the movements of the heart and arteries are immediately produced by the stimulus of the blood." "Dr. Darwin is now," a note says, "planting an extensive botanic garden." He appears to have been the only physician in the place, but there were seven surgeons and apothecaries, one of whom, a Mr. Green, had, we are told, a museum "well worthy the inspection of the curious."

Mention is made in the obituary at the end of the Directory of the death of Mr. Charles Darwin, a son of the Lichfield Dr. Darwin, who died of blood poisoning at Edinburgh on May 15th,

1778, in his twentieth year. This Mr. Charles Darwin was evidently a man of great promise. About two months before his death he had gained the prize medal of the *Æsculapian Society of Edinburgh* for the best essay on the means of distinguishing pus from mucus, and he had written an essay on diabetes, which he intended to read as his inaugural thesis when he took his degree.

At Wolverhampton there was one physician with six surgeons and apothecaries; Newcastle-under-Lyme four men; at Stone two men; Tamworth six; Walsall one. Whilst Stoke, Hanley, and other towns are not mentioned at all.

In the obituary I note the announcement that on January 10th, 1778, at Upsala, of ulceration of the urinary bladder, the celebrated Sir Charles Linnæus died, the distinguished man who founded the great classification of plants and noticed the difference of their sexual organs. Baron Haller is also mentioned in this obituary list; he died December 12th, 1777.

In matters of education very little was being done for the general practitioner. The College of Physicians made both fellows and licentiates undergo three examinations in Latin, at three several monthly meetings, before the president and censors. The College of Surgeons, who had only separated from the Barbers a little more than thirty years, made their candidates pass one examination in English. At the Universities of Oxford and Cambridge there were professors of medicine, who gave one course of lectures during the year; and in London there were different teachers of medicine, chemistry, materia medica, botany and midwifery, anatomy and surgery; the most celebrated being Mr. John Hunter, on surgery; Dr. William Hunter and Mr. Else on anatomy. At the University of Paris, however, was such a curriculum as would have delighted our Ex-President, for there the Directory informs me that the unhappy student had to pass no less than ninety examinations during his two and a half years' course of study. The majority of surgeons and apothecaries passed no examination whatever, their only qualification for practice being that they had served an apprenticeship of seven years. Smollett has given an amusing description of his exami-

nation at the College of Surgeons in the year 1741. He says, "I was conducted into a large hall, where I saw about a dozen grim faces at a long table, one of whom bid me come forward in such an imperious tone that I was actually for a minute or two bereft of my senses. The first question he put to me was 'Where were you born?' To which I answered, 'In Scotland.' 'In Scotland!' said he, 'I know that very well; we have scarce any other countrymen to examine here; you Scotchmen have overspread us of late as the locusts did Egypt.'" After a few more similar questions, one of which elicited the fact that he had only served three years' apprenticeship, he was then handed over to a second examiner, who put a few questions, and so on to a third and a fourth, who expressed opinions which were heterodox to the other members; then a general hubbub ensued, ending in the intervention of the chairman and the withdrawal of Smollett.

Before leaving the subject of Education I must mention a notice of the Warrington Academy, the earliest mention of any Collegiate establishment I can find, which was open to students of all denominations. Courses of lectures were given on theology, ethics, logic, classics, mathematics, history, commerce, geography, language, elocution and composition, modern languages, chemistry, anatomy, etc. These subjects were taught by different lecturers, and students could attend any course they wished, to fit them either for a commercial life or for any of the learned professions. At this school term began on the 10th of September and went on without interruption until after Midsummer Day. How we modern parents must envy our ancestors! Mr. John Aitkin, a brother of Mrs. Barbauld, was the lecturer on anatomy and chemistry.

Upon the subject of Medical Ethics I find a Dr. Samuel Farr, of Bristol, writes his "Observations on the Character and Conduct of a Physician, in twenty letters to a friend;" doubtless a well-meaning, kindly gentleman, pained by the misconduct of his medical neighbours, who sometimes assailed each other in print. I find a Dr. Bromfeild publishes "A Narrative of Certain Facts relative to Mr. Aylett, Surgeon and Apothecary at

Windsor," whilst Mr. Aylett retaliates with "A Refutation of the Account of Facts published by Mr. Bromfeild." No doubt these two pamphlets were very spicy and amusing to the lay reader. Occasionally they fought it out with pistols or swords, and many instances are recorded of duels in which doctors took part. How happy we modern doctors should be, in having an Ethical Committee attached to each of our Branches to settle our little differences.

The only mention of any association at all approaching our modern sick club is at the Portsmouth dockyard, where I find the surgeon, in addition to the pay of £100 per annum, received a capitation fee of twopence per month from each of the men employed. In some respects we have surely retrograded since the days I am speaking of, for I find that there existed then in Dublin a hospital for incurables, and the constables and others received a reward of half-a-guinea every time they brought to the hospital persons who were found exposing their deformities in the streets. Then again the College of Physicians had powers under its Act of Parliament to enter at any time any apothecary's shop, and to examine all drugs, etc., used in medicine, and power to destroy all drugs not fit to be used, and power was also given to the President to commit offenders against their Act to prison.

Mention is made of the Hôtel-Dieu in Paris, which contained upwards of three thousand patients. There were several rows of beds in each ward, and four, and sometimes six patients in each bed. It was no wonder that one in five died of all that were admitted to the hospital. At the Charité Hospital each patient had a separate bed, and there the mortality was only one in eleven. But if the hospitals in Paris were unhealthy the Royal Society of Medicine and the Faculty of Medicine were trying to advance medical knowledge by offering prizes ranging from £50 down to prize medals for essays on different subjects; those announced for the following year being:—

"To ascertain the physical, moral, and political advantages resulting from mothers suckling their children."

"To determine, by a number of accurate experiments and

observations, whether contagious diseases, and particularly the smallpox, are capable of being spread by means of the air."

"What is the best method of treatment in the case of hydrophobia?"

"To ascertain the best method of curing speedily, and with certainty, the itch, contracted by communication, as happens in hospitals, barracks, prisons, etc."—and several other subjects.

The Royal Infirmary at Edinburgh set a very good example in sanitary reform: the wards were airy and spacious; some of them were always empty, with a view to their being well cleansed and ventilated. The mortality was one in twenty-five. The mortality last year (1896) was 6·28 per cent. There were ten beds in the lying-in ward, which was fourteen feet high, and had ten windows in it. No patients were received in this ward from the middle of July to the twelfth of November, so that it might be purified. In the county hospitals the mortality was very low, if the returns are correct. Shrewsbury Infirmary, out of 566 in-patients, only 19 died; Newcastle Infirmary, 678 in-patients, 19 died; York Infirmary, 862 with 10 deaths; Salisbury Infirmary, 360 (51 of which were accidents) with 12 deaths. A mortality we might well envy now-a-days.

Before closing my commentaries I should not omit mention of Dr. Henry Revell Reynolds, who was the Beau Brummell of the profession, and was known as "well-dressed" Reynolds (even in his grave clothes his tastes were shown). Of him the epitaph was written:—

"Here well-dressed Reynolds lies,
As great a beau as ever;
We may perhaps see one as wise,
But sure a smarter never."

He is said to have been the last of the silk-coated physicians. He attended George III. during his mental affliction, and although he lived well into the present century, he continued to the end to wear his well-powdered wig, silk coat, breeches and stockings, buckled shoes, lace ruffles, etc., and carried his gold-headed cane. This costume, though exceedingly picturesque, proved a terrible snare to a Dr. Kemp, who was a handsome old gentleman of seventy, and who was staid, decorous, and

thoroughly versed in the social proprieties of the old world. People wondered why he had never married. A lady who was much respected in society kept his house. She was fair and forty, but still graceful, and a general favourite, being pleasant, cheerful and very benevolent. She was also an authority on matters of dress and taste, and dressed well herself, with a white kerchief round her throat, a high bodice and very short skirts, as was the fashion of the day. Beneath the skirt was shown a very neat foot and ankle, clothed in scarlet stockings with yellow embroidered clocks and natty high-heeled shoes. One night Dr. Kemp was called up to go in great haste to a patient who was said to be dying; in his agitation and haste to dress the old gentleman knocked the candle over, and rather than lose time in hunting for it he continued to dress in the dark, finding his garments with comparative ease; finally putting on his peruke, he groped his way downstairs, and ran to the patient's house. He was instantly admitted, and went at once to the patient's bedside, finding a nurse and three neighbours—ladies—in attendance. He was much astonished, however, when the patient (who was evidently suffering much pain) burst out laughing in his face. Much puzzled he turned to the nurse for an explanation; she also was struggling to conceal her amusement, and so he turned from one to the other, until the last said, "Oh, Dr. Kemp, do look at your stockings!" He did look at his stockings; one was of black silk, the other a scarlet one with yellow clocks!

Gentlemen: It now remains for me to thank you very heartily for the very patient hearing you have given to a very rambling discourse. I can only hope I have succeeded in interesting you in the doings of some of our forefathers. On looking through the titles of books and pamphlets mentioned in this Directory one cannot fail to be struck with the thought, how near many of these old writers were to the truth, and how long it has taken to develop and mature their ideas. Ours certainly has been a goodly heritage, and our gratitude must ever be due to men like Harvey, Sydenham, John Hunter, Jenner, and others of our predecessors in the dim and misty past.

VOLVULUS IN A HERNIAL SAC, AND IN THE
ABDOMEN: TWO CASES
CURED BY OPERATION: WITH REMARKS.

BY J. T. J. MORRISON, M.A. CANTAB., F.R.C.S. ENG.

SENIOR SURGEON FOR OUT-PATIENTS AT THE QUEEN'S HOSPITAL;
ASSISTANT TO THE CHAIR OF SURGERY IN MASON COLLEGE.

(Continued from page 293.)

Concluding Remarks.—Considerable interest attaches to these cases by reason of (*a*) their remarkable rarity, (*β*) the obvious explanation of their occurrence, and (*γ*) their successful treatment by operation.

(*a*) The writer has made a prolonged search through the bibliography of intestinal obstruction without finding a record of a single example of volvulus in a hernial sac. So purely negative a result is surprising, for it is certain that the anatomical and mechanical conditions to which a herniated volvulus must be ascribed are not infrequently met with; indeed, Agnew goes so far as to suggest that twisting of loops, with adhesions, may prove a possible difficulty in reducing the contents of a hernial sac, but he does not mention any actual case. It may, therefore, be fairly assumed that prior cases have been observed, but not widely recorded, whilst in other instances the significance of the condition has not been recognised.

With regard to the second case, its extreme rarity is evidenced by the fact that Treves* had only been able to collect seven examples of the same kind; and, in later works, the writer has not found any further records.

(*β*) The *rationale* of the displacement in each of the two cases seems plain. In Case 1 a loop of small bowel, usually presenting at the left internal abdominal ring, had become accustomed to frequent capture in the inguinal sac, with the

* Intestinal Obstruction, p. 161.

result that it became somewhat separated from the rest of the bowel, and its mesentery was lengthened by repeated stretching. The ends of the loop thus, to some extent, isolated, would tend to become approximated by inflammatory gluing together of the plications of mesentery at the ring, the local peritonitis being increased by mesenteric adenitis, of whose existence some indications are given in the account of the operation. Assuming that a loop of this kind were already in the sac, it is easy to understand how it would be forcibly twisted around its pedicle by the onward rush of several additional feet of bowel suddenly crowded through the ring by the propulsive fit of coughing. In Case 2 a loop of small intestine had probably become similarly individualised by falling into the pelvic space left void by the prolapsed uterus. Here, too, there had been some peritonitis with the formation of an adhesion, whereby one leg of the loop was fixed, whilst the returning uterus forced the bowel back again into the abdomen with a twisting movement, thus producing the volvulus, which completely occluded the lumen of the gut and strangled the portion involved.

In each of the cases it is almost certain that the ileum was the seat of the displacement; for, as pointed out by Gant,* it has a longer mesentery than the remainder of the small intestine, and it presents naturally near the inguinal and femoral rings; and, moreover, it is far more prone than the jejunum to drop a coil or two into the pelvis.

(γ). Having regard to the high mortality of coeliotomy for intestinal obstruction (probably more than 70 per cent., according to Greig Smith†), every successful case possesses a special interest. Obviously the first case must not be regarded as an instance of strangulated hernia in the ordinary usage of the term, but rather as one of volvulus, giving rise to obstruction. Taken together, the cases reinforce the growing body of opinion in favour of the treatment of acute obstruction by operation, even though the patient's general condition may be extremely grave.

* Science and Practice of Surgery, 3rd Ed., ii., p. 573.

† Abdominal Surgery, 5th Ed., ii., p. 662.

I have to express my thanks to Mr. H. T. Mursell, House Surgeon, *eo tempore*, for his assistance in connection with Case 1; and in the second case to my senior colleague Mr. Bennett May, who kindly transferred the patient to my charge, and to Mr. W. S. Willmore, House Surgeon, for his watchful care in the after-treatment.

PERISCOPE.

STRUCTURE AND PATHOLOGY OF THE NERVOUS SYSTEM.

BY O. J. KAUFFMANN, M.D.

(Continued from page 307.)

Bruce and Muir (*Brain*, Vol. xix.) add an important contribution to our knowledge of descending degenerations consequent upon damage to the spinal cord. It was noted in the last number of this journal that Déjerine and Thomas had described a descending degeneration, which was confined to the posterior columns of the cord, consequent upon isolated lesion of the posterior nerve-roots of the eighth cervical and first dorsal nerves. Bruce and Muir now describe a descending degeneration in the posterior columns in the lumbo-sacral region, following upon a complete transverse crush of the cord in the upper lumbar region, due to fracture-dislocation of the twelfth dorsal vertebra. They find (in addition to the common degenerations in the lateral and anterior columns) descending degeneration, occupying the following positions:—

a. Just below the lesion on each side a marked band extending in the posterior column along the inner margin of the posterior cornu, but not reaching quite up to the grey commissure.

β. At the same level, a bilateral area of degeneration visible in the columns of Goll and immediately adjacent to the posterior

median fissure, and extending from the periphery inwards about one-third of the length of the fissure. This area was narrow, but markedly degenerated.

γ . At the same level, a rather wider but less intensely degenerated area, extending along the circumference of the cord from the posterior median fissure half way to the posterior roots. This area was continuous with area β at the posterior median septum.

δ . Slight diffuse degeneration in the middle root-zone.

Lower down the cord the degeneration marked and gradually diminished in extent from before backwards, while the degeneration here called β increased in intensity and also in extent forwards, reaching to the posterior commissure at the level of the fourth lumbar root. At the second sacral root degeneration α was no longer visible, β being still very intense. Hence downward β likewise lessened in extent forward and in intensity. Degeneration γ gradually contracted from above downward till it appeared only to form a triangular expansion of β at the hinder end of the latter.

The authors propose to call this descending tract the "descending septo-marginal tract" (regarding degeneration α as merely due to the direct injury which had resulted to posterior nerve-fibres by the accident). They consider that it corresponds in position to the "oval field" of Flechsig and the "dorso-median sacral band" of Obersteiner. Further that it is independent of the "comma-tract" and of the cornu-commissural tract of Marie. By the fact that this bundle escapes in locomotor ataxy and injuries to the cauda equina it seems to be shown that it is not directly continuous with posterior nerve-roots in the lumbo-sacral region. The fibres of this tract were at the lowest level of the degeneration traced forwards into the base of the grey matter of the same side.

Cf. the note on descending degeneration after lesion of hinder nerve-roots recorded by Déjerine and Thomas. (This *Periscope*, November, 1897).

According to Pellizi the centripetal connections between the spinal cord and the cerebellum can be grouped under four heads, thus :—

1. Connections between the nuclei of the posterior columns and the inner part of the restiform bodies.

2. Dorsal cerebello-spinal column, in other words the lateral or direct cerebellar tract.

3. Ventral cerebello-spinal column, formed by a fusion of the intermedio-lateral ascending tract (of Gowers) and of the antero-lateral ascending tract of Löwenthal.

4. A median cerebellar tract, situated in the cord between the two last-mentioned tracts, and separating from the ventral tract (3) at the level of the corpus trapezoides.

All these three columns contain direct continuations of posterior spinal roots. The author assumes that these tracts subserve centripetal impulses from muscles in a state of contraction.

Raymond (*Journ. de Méd. and Chir. Prat.*, Nov. 10, 1897) records a case of reflex muscular atrophy arising from injury to a joint. It concerned a man aged 43, who, after a forced bicycle ride, had a slight arthritis of the ankle-joint. The whole limb gradually wasted, so that the leg and thigh at the end of two months looked like skin and bone, and he could no longer walk. The patient improved greatly after rest and a season at Aix, but a fresh over-exertion led to a recurrence of the atrophy, which this time invaded the other leg (which had not been injured). Improvement was followed by another relapse, but finally the man got well, being left, however, with a certain degree of muscular atrophy and exaggerated reflexes. There was never any pain, and the electrical reactions were not altered. The extension of the atrophy to the symmetrically situated parts of the uninjured limb is quite exceptional.

R. T. Williamson (*Med. Chron.*, Nov., 1897) records the results of a minute examination of the spinal cord from a case of locomotor ataxy, dead in the third year of the disease. The

leading symptom of the patient from the very first had been continuous and severe pain in the back, now greatest in the sacral, then in the dorsal, and at other times in the lumbar region. He had the characteristic symptom-complex of locomotor ataxy, the hands being affected, and it is interesting to note that there was only one small and ill-defined area of analgesia. Death occurred from an accident.

Post mortem.—No changes could be found in the anterior tibial nerve, in the region of which he had had severe pains, and the cord did not show any change visible to the naked eye.

Microscopically, sclerosis was found in the hinder columns in the lumbar, dorsal, and cervical regions, and to these columns and a part of the grey matter of the hinder horns the cord-changes were rigidly confined. Only very slight disease was detected in the posterior nerve-roots, and this consisted in a slight increase of the interstitial tissue. Neither by Weigert's, Marchi's, nor by Heller's method could any degenerated nerve fibres be found in these roots. The pia in the region of the hinder nerve-roots was slightly thickened and infiltrated with inflammatory cells.

In the posterior columns sclerosis and degeneration were most intense about the middle of the columns of Burdach and in Lissauer's tract. The front part of the columns was almost intact, as was a zone round the periphery of both hinder columns. In the degenerated area the arterial branches were greatly thickened. The sclerosis in the lumbar region, as usual, was most marked in that part of the posterior-external columns called the external band, whereas marked ascending degeneration in the column of Goll in the cervical region was superadded to the characteristic lesion of Burdach's column. In the grey matter the columns of Clarke showed distinct nerve-fibre degeneration. It is noteworthy that the antero-lateral ascending tract escaped entirely. [Possibly in connection with the want of analgesia.]

Williamson again draws attention, as he has done in a previous series of papers, to the part which arterial degeneration

plays in the production of nerve-degeneration within the cord, and gives a summary of the researches bearing upon this point.

The most important experimental research of the year on the spinal cord is one by J. S. Risien Russell (*Brain*, 1897), undertaken in order to elucidate the innervation of the muscles concerned in the production of spasmodic wry-neck. The author points out the unsatisfactory results from the surgical operations usually employed for the relief of this affection, their insufficiency being partly due to the fact that many of the nerves concerned are not divided, and partly to the fact that recurrence in the artificially paralysed muscles and spreading of the spasm to other muscles than those first involved is common. The experiments were conducted on monkeys. The author's great experience and the description of the precautions adopted to prevent errors of inference place Dr. Risien Russell's results beyond doubt.

The first part of the investigation is directed to the movements of the head resulting from irritation of the several cervical and some dorsal nerve-roots as they lie within the neural canal. Briefly summarised the results are as follows :—

Excitation of the 1st and of the 2nd cervical nerves produces an almost pure lateral inclination of the head on to the shoulder. The 2nd nerve produces, in addition, a very slight backward movement of the head and the slightest possible rotation on the vertical axis.

Stimulation of the 3rd and of the 4th cervical nerves provokes a movement of the head which is chiefly backwards, the occiput being drawn to the excited side, the chin being in consequence turned away from the stimulated side and upwards. There results also some lateral reflexion of the head towards the stimulated side.

Excitation of the 5th and of the 6th roots causes remarkably little movement of the head. What little there is consists in backward retraction of the occiput ; but it is variable in degree in different animals, though, as remarked, always slight.

The 7th and 8th cervical roots produce under electrical stimulation, much less movement of the head than the four upper

nerves, but much more than results from stimulation of the 5th and 6th roots. The effect is to pull the occiput backwards and to the side stimulated, but the movement is secondary, being effected by contraction of the latiss. dorsi, which pulls the scapula downwards and with it the muscles connected with that bone and the head.

The 2nd dorsal nerve, and likewise the third and lower nerves of this series only move the head indirectly by curving the spine through contraction of the erector spinæ.

The 1st dorsal nerve when stimulated gives different effects in different animals, the movement of the head resembling that produced by the 7th and 8th cervical nerves, when the latiss. dorsi is represented in it; but resembling that due to stimulation of the lower thoracic nerves when the latiss dorsi is not so represented.

The author remarks upon the striking pairing of the nerve roots as regards motion of the head. Thus the 1st and 2nd nerves are equally effective and produce the same movement; the 3rd and 4th produce another movement, different from that due to the 1st and the 2nd; the 5th and 6th are each almost inactive as regards head-excitation, and the 7th and 8th each produce the same indirect effect.

For the author's detailed statements as to muscles represented in anterior nerve-roots, nerve-supply to muscles and differences between his results of them, stated in the last edition of "Quain's Anatomy," we must refer the reader to the original paper.

The following are the more important general conclusions at which Dr. Risien Russell arrives:—

There is more individual variation in the nerve-root supply to the neck muscles than in that to the limb muscles.

Separate segments of the same muscle contract to stimulation of different nerve-roots.

Though there is individual variation, yet in all cases the character of the predominant movement remains constant on stimulating a certain nerve-root.

Surgical treatment for wry-neck must be chiefly directed to the 4 upper cervical nerve-roots, and according to the predominant type of movement, more especially to the 1st and 2nd or to the 3rd and 4th.

On the question whether, after section of the main nerve supply to muscle, a smaller, subsidiary supply may in time conduct all the impulses, the author admits facts on each side; for whereas he concludes from these and former experiments that as a rule definite parts of a muscle are supplied by separate nerve-roots, yet he admits that after complete section of the nerve-roots the muscle recovers mobility in all its parts to a remarkable extent—even when all possibility of the reunion of the cut ends is removed.

[That the muscles, even after the most efficient section and excision of part of the supplying nerves, recover their contractility and their clonic spasm is unfortunately a common experience with those who have seen anything of operations for wry-neck. Whichever be the theory adopted as to the reason of their re-appearance, it must be conceded that in all cases a connection between the central axis and the muscles affected either has escaped the surgeon or forms subsequently to the operation. Again, it is clear that this remaining connection is not that by which impulses usually reach the muscle, for such operations, as a rule, result in temporary or even prolonged cessation of the spasm and paralysis of the muscles. Dr. Risien Russell suggests an explanation for this return of spasm which appeals by its simplicity and is in keeping with changes observed in muscle on the section of its nerves and with the common clinical experience of operations for torticollis. This is it: Stimuli reaching certain muscle fibres by means of a nerve connection which normally is perhaps of subsidiary importance, may induce secondary contractions in other fibres of the muscle, the nerve-supply of which has been cut off. The path of these impulses in the muscle would be from the muscle fibres still connected to those disconnected by means of organic or physiological contact.]

REPORTS OF SOCIETIES.

BRITISH MEDICAL ASSOCIATION. BIRMINGHAM AND MIDLAND COUNTIES BRANCH.

The Second Meeting of the Session was held on Thursday, November 11th, 1897; the President, Dr. SAUNDBY, being in the chair.

Dr. Purslow read a paper on "Some Recent Cases of Hysterectomy."

Dr. Deanesly read a paper on "Acute General Peritonitis originating in the Vermiform Appendix."

Dr. Purslow showed:—

A Fibroid Uterus weighing 3 lbs. 5 oz., removed by the operation known as Pan-hysterectomy.

Uterus with Epithelioma of the Cervix, and containing a ten-weeks' pregnancy, removed by Vaginal Hysterectomy.

Uterus removed by Vaginal Hysterectomy from a patient suffering from uterine hæmorrhage which had resisted all other forms of treatment, and was becoming dangerous to life.

All three patients made satisfactory recoveries.

Myoma Uteri removed by Hysterectomy.—Mr. Morrison showed a myomatous uterus with adnexa, weighing $3\frac{1}{4}$ lbs., removed by abdominal hysterectomy. The patient was a nullipara, æt. 34, incapacitated from her work as a domestic servant by debility due to menorrhagia and painful incarceration of the growth in the pelvis, causing retention of urine. The operation was performed at the Queen's Hospital on May 4, 1897. The vagina was first incised around the cervix, and the ureters and bladder displaced from the uterus; the abdomen was then opened, and the parts removed after ligation of the broad ligaments in sections. Free hæmorrhage was

encountered owing to retraction of the right uterine artery from its ligature near the cervix; this was temporarily commanded by pressure, whilst the growth, which reached to the umbilicus, was amputated above a cold wire loop. The bleeding vessel was then found against the wall of the pelvis and securely tied, and the operation completed by removing the stump of cervix below the wire, drawing the long ends of the ligatures down through the vagina, and closing the abdominal wound, a Keith's tube being left in some hours as a precaution in case of reactionary hæmorrhage. The resulting collapse was tided over by the injection of hot saline fluid (solution of common salt) and brandy into the rectum, and subsequently the patient made an uneventful recovery. She is now in excellent health and filling a situation as general servant.

Mr. Christopher Martin showed a papillomatous tumour of the right ovary removed a fortnight previously from a patient æt. 52 years. There was a large amount of coffee-coloured ascitic fluid containing an abundance of cholesterine. The growth itself was about as large as an orange, and consisted of a dense mass of cauliflower-like processes springing from a central core of ovarian tissue. There were no secondary growths. The patient was making an excellent recovery.

PATHOLOGICAL AND CLINICAL SECTION.

SESSION 1897-98.

The First Meeting of the Session was held in the Medical Institute, on Friday, October 29, 1897; Dr. SIMON in the chair.

Family Chorea.—Dr. Douglas Stanley showed two cases of chorea coming on at the ages of 34 and 23, in a sister and brother respectively. No other member of the family had shown a similar affection so far. The movements, which were very jerky in character, had been gradually getting more marked.

Lead Poisoning.—Dr. Russell showed a case of lead poisoning,

in which, in addition to the usual extensor paralysis in both upper extremities, there was atrophy of the muscles of the thumb and little finger and also of those occupying the interosseal spaces. Dr. Russell believed that, in addition to the ordinary musculo-spiral neuritis, there was a lesion of the cells of the anterior cornua accounting for the atrophy of the hand muscles.

Death from Faecal Impaction in a Child.—Mr. Barling read a note on this case. The patient was first under observation a year ago with an enormous impaction, which so distended the rectum that it occupied the whole pelvis, and led to suspicion of sarcoma growing from the pelvic wall. Under anæsthesia an immense quantity of hard fæces, and a quantity of plum stones were evacuated, and eventually a regular action of the bowel was established. The child was discharged and was lost sight of until recently, when she was re-admitted to the hospital in a dying condition.

At the autopsy a huge distension of the abdomen encroached upon the thorax so that the diaphragm on the right side reached to the second inter-costal space, and on the left side to the third rib, and the heart was pushed upwards until the upper border of the right auricle was on a level with the clavicles. The whole of the large intestine was enormously distended, but the distension ceased at the ileo-cæcal valve. The rectum at its upper part was seventeen inches in circumference, and its muscular coat appeared to have undergone extreme atrophy.

The rectum and part of the sigmoid flexure were occupied by a large quantity of fæcal matter, but above that the distension was mainly gaseous. There was no rent in the intestinal wall, nor was there any peritonitis, and death seemed to have resulted from the extreme abdominal distension encroaching upon the thorax and interfering with the action of the heart and lung.

Suppurative Pylephlebitis.—Dr. Codd showed specimens from a case in which suppurative pylephlebitis had followed appendicitis. The patient was a male, aged 18. The illness began three weeks before admission, with abdominal pain, vomiting, and emaciation. On admission into the Wolverhampton General

Hospital the liver dulness was found to extend from the fifth rib in front to the level of the ninth dorsal spine posteriorly; it extended on the right side to the level of the umbilicus. The right hypochondrium was bulged, and the chest measured two inches more on the right side than on the left. The abdomen was full and tender, and efficient palpation impossible. Pain was especially located in the hypogastrium. At 8 a.m. on the morning after admission the patient had a sudden agonising attack of pain. Abdominal respiration ceased, and a fluctuating tumour was felt in the ileo-cæcal region. In the evening he suddenly became worse, and died at 7 p.m., 25 hours after admission.

Post-mortem.—Some coils of intestine were found glued together near the cæcum. There was an abscess over the cæcum with the necrotic appendix floating in it, and another extending along the ascending colon. The right colic vein was distended, and contained thrombi and pus. The portal vein was also full of pus and septic clots. The liver was enlarged, and the branches of the portal vein were converted into a series of abscess cavities. This case resembled one shown in the spring, in which there was a quiescent perityphlitis which had caused suppurative pylephlebitis. One of the abscesses had set up a hypophrenic abscess, which had in turn burst into the peritoneal cavity. In both cases there were no rigors or jaundice.

Dr. Foxwell showed the lungs and heart from a lad of 18, who died in the Queen's Hospital on October 6th. The lower lobe of each lung was completely fibrosed, the two together not exceeding a healthy adult spleen in size. The bronchial tubes of each were greatly and numerous but unevenly dilated in a cylindrical manner. The middle lobe of the right lung was in a similar condition, but its comparative reduction in size was much less, as it was larger than either of the lower lobes. The lungs as a whole occupied as much room as usual, the upper lobes being considerably hypertrophied. There was some dilatation of the tubes of the right upper lobe, with fibrosis and

considerable pleuritic adhesion; this morbid change was probably of recent origin. The right ventricle was large and greatly hypertrophied, its wall being as thick as that of the left ventricle.

Though the lad's work was laborious he insisted that he had never suffered from dyspnoea or any illness till he had pleuro-pneumonia six months before he died; but ever since this illness he ~~had had~~ bronchitis, increasing dyspnoea, and oedema. On admission he also had much cyanosis, a hard liver reaching to the umbilicus, a slight icteric tinge, some epistaxis, and greatly clubbed fingers. The urine measured from 12 to 26 ounces daily; it was lithatic and contained a little albumen. The condition of the heart showed that the bronchiectasis and fibrosis of the three lower lobes must have been of very old standing, probably congenital; or coming on with whooping cough or bronchitis in infancy. The case was remarkable for the absence of all apparent symptoms prior to the onset of the pleuro-pneumonia: this permanently upset the respiratory equilibrium by throwing nearly the whole of the work upon the left upper lobe. The bronchiectasis of the middle lobe was diagnosed before death, that of the two lower lobes was not; chiefly, no doubt, owing to their being enveloped by the overgrown upper lobes. Consolidation was diagnosed at the left base, but the condition of the right upper lobe prevented any such local differentiation on the right. Naturally, such an extremely rare thing as double symmetrical bronchiectasis was not suspected.

Mr. Christopher Martin showed a macerated foetus, six months advanced, which he had removed from a suppurating extra uterine gestation. The patient was married, and 24 years of age. Fifteen months ago she became pregnant and missed her period for three months. Then she had what was supposed to be a threatened miscarriage. Menstruation returned and became regular. At the sixth month the foetus died. For some months the patient remained well, when septic symptoms supervened; the foetus decomposed and the gestation sac filled with horribly foetid pus. Mr. Martin opened the sac per vaginam, extracted

the foetus piecemeal and packed the sac with iodoform gauze. There was no trace of a placenta. The patient made an excellent recovery.

Abscess of Ovary.—Dr. Purslow showed this specimen which he had removed by abdominal section. Twelve months before the operation the patient, under the mistaken impression that she was pregnant, passed a wooden crotchet hook, with the intention of procuring abortion. A severe attack of peritonitis followed, which gradually subsided, leaving however a fixed lump in the left posterior quarter of the pelvis; there was severe pain with progressive loss of flesh and deterioration of general health, so that operation was decided on. The mass was densely adherent, and on removal proved to consist of ovary and tube, the latter not distended, but the former containing four distinct abscess cavities, containing in all about 2oz. of pus. Patient recovered and was in much better health after operation.

REVIEWS.

PRACTITIONER'S HANDBOOK OF TREATMENT.*

ONE of the most striking features of medicine in the latter half of the nineteenth century is the enormous growth of its literature. We may well ask how many of the books which appear weekly will survive the next twenty years, for the works which bear the test of time are in reality not numerous. Such a work is the "Practitioner's Handbook of Treatment," by the late Dr. Milner Fothergill, and which now appears in its fourth edition under the editorship of Dr. Murrell. From the very first this book was recognised as a standard, so much so that hardly the great advance in therapeutics of the last few years can detract from the pleasure of reading the first edition. The work is one

* Practitioner's Handbook of Treatment. By J. Milner Fothergill. London: Macmillan and Co.

of those which is so vividly impressed with the strong personality of the writer, and so full of keen insight and ripe experience, that it seems barely possible to improve it by adding descriptions of more modern methods, a task which is often difficult to fulfil. In the present instance, however, this has been done by Dr. Murrell with very wise caution; for he has been at pains to leave untouched as far as possible the original features of the book, only adding where necessary to bring the work up to date in order to be of service to the practical therapist. For the most part all the modern editions are mentioned in the introduction, so that it is quite possible to distinguish the new from the old. But even in thus adding to the work the editor has been careful to conform to the style of the original author. In this manner the work reads smoothly, being for the most part devoid of any sharp differences in style, and we feel certain that had the gifted author been still alive to re-edit his own work, it would have appeared in very much the same form as the present edition. There is no book which would better repay the newly-qualified practitioner by being carefully studied than the present. "Practice differs essentially from the examination table. An examiner may temper the wind to the shorn lamb and remember that a diploma only guarantees the possession of a minimum of knowledge; but in practice the most complicated affections are presented to the tyro."

The aim of this work is to look at the treatment of disease from the point of view of the practitioner rather than from that of the clinical teacher describing a typical case. This is very often the cause of failure in early practice—the attempt to make the patient suit the treatment. The careful study of a book such as this is—full of suggestion and practical hints—will be of the utmost value in cases of difficulty and doubt.

HYGIENE AND PUBLIC HEALTH.*

Amongst late publications is a new edition of Dr. Louis Parkes' valuable treatise on Hygiene. In its present condition the book is invaluable, not only to students of medicine, but also to practitioners, being pleasant to read and at the same time full of information on a number of subjects of every-day importance.

The text of the last edition has been thoroughly revised, and in many of the sections additions of an important nature have been made relating to the most recent work which has been done on the subject treated of in that particular section.

The section on Air and Ventilation is of special value, as under this heading Dr. Parkes introduces a subject which has not previously received much attention in English scientific literature, namely, trades' diseases. He gives, with as much detail as space will allow, much information on many of these maladies, particularly those which are due to inhalation of noxious dusts and vapours, such as pearl grinders' phthisis, plumbism, etc.

In the section on Food is found a note on the result of the Royal Commission appointed to inquire into the effect of food derived from tuberculous animals.

Experiments carried out for the Commission show that tuberculous material is seldom found in the muscle substance, but that this may be infected by contact with diseased glands from the same animal. Experiments also show that the risk of infection is not entirely destroyed by the usual methods adopted in cooking, as the temperature is not raised to a sufficient height throughout the joint. All meat, therefore, which is taken from tuberculous animals should be condemned as unfit for human food.

A noteworthy point, too, with regard to milk is that recent experiments have shown that it cannot be rendered absolutely sterile until it has been heated to the boiling point.

* Hygiene and Public Health. Fifth Edition. By Louis C. Parkes, M.D., D.P.H. Lond. Univ. London : H. K. Lewis. 1897.

In the section on Contagia is a paragraph devoted to the work done recently in rendering animals immune to specific diseases by injecting them with toxins obtained by cultivation from the microbes to which those diseases are due. By injecting the blood serum derived from these immunised animals into human beings, the course of the disease can be arrested, or certainly modified. The beneficial effects of these experiments are shown by the good results obtained in the antitoxin treatment of diphtheria.

We consider that, with the additions to which we have called attention, and others of minor importance, this book is as complete as one could wish. Dr. Parkes is to be congratulated on having conferred such a boon on the medical profession.

MASTOID ABSCESSSES AND THEIR TREATMENT.*

THE volume is a translation of a memoir published in 1895, after having been awarded the Prix Mignot by the French Academy of Medicine in 1894. It gives the practical conclusions to which its authors have been led by personal experience of 146 operations. The book is divided into four chapters, dealing with Mastoid Abscesses, Mastoid Fistulæ (which together occupy some 216 pages), Chronic Suppurative Inflammations of the Middle Ear, and Results. Short notes of the whole of their "129 patients' cases" are given, and the special subject of intracranial complications of middle ear diseases is purposely left to be dealt with in a subsequent volume. The work is "thorough" and is well written, much labour is evidenced in its preparation, the most modern views and methods of treatment are carefully detailed, but it is one of

* Mastoid Abscesses and their Treatment. By A. Broca, M.D., Chirurgien des Hôpitaux de Paris, etc., and F. Lubet-Parron, M.D., ancien interne des Hôpitaux de Paris. Translated and edited from the French by Henry J. Curtis, B.S. and M.D. Lond., F.R.C.S. Eng.; Assistant to the Professor of Pathology, University College; Assistant in the Ear and Throat Department, University College Hospital, London. Illustrated. London: H. K. Lewis. 1897.

a great class of medical books which could very well be done without altogether. There can be no justification for the publication of a volume comprising nearly 270 pages devoted entirely to the comparatively small subject of mastoid inflammations. It is books of this kind which sicken practical medical men with the literature—save the mark!—of their own profession. We are fully alive to the gravity of the malady dealt with in this volume, having had much practical experience in its treatment, and we venture to think that all that can be said upon it of real practical value might be condensed into twenty or thirty pages of a volume such as the one now before us. To the general practitioner seeking knowledge, books of this kind are absolutely valueless, as in the midst of so much useless chaff the useful grain is missed altogether. To the specialist in aural diseases the bulk of the volume is mere commonplace, and whatever is new in it might have been more carefully embodied in an original paper on the subject.

ELEMENTS OF THE COMPARATIVE ANATOMY OF VERTEBRATES.*

THIS is an enlarged second edition of an already well-known and excellent text-book, founded upon the third edition of Professor Wiedersheim's *Grundriss der Vergleichenden Anatomie der Wirbelthiere*. Additional information has been added, and there is a most valuable Bibliography which renders the book essential to advanced students. To those who do not know the first edition, we may say that the excellent and clear account which it gives of the leading facts of Comparative Anatomy, together with the numerous and beautiful illustrations which crowd its pages, make it by far the best text-book on its subject for students, whether of science or of medicine.

* *Elements of the Comparative Anatomy of Vertebrates*. Adapted from the German of Dr. Robert Wiedersheim, by W. N. Parker. Second Edition. London: Macmillan. 1897.

LITERARY NOTE.

The Rebman Publishing Company have ready for early publication a small book by Mr. D'Arcy Power, entitled "Some Points in the Anatomy, Pathology, and Surgery of Intussusception," being the Hunterian Lectures for 1897, delivered at the Royal College of Surgeons.

They will also issue next week Dr. Alexander Morrison's new book on "Cardiac Failure and its Treatment, with especial reference to Baths and Exercises," which has been unavoidably delayed in the press.

New Books, etc., Received.

- A System of Medicine by many writers. Edited by THOMAS CLIFFORD ALLBUTT, M.D., F.R.S., Regius Professor of Physic in the University of Cambridge. Vol. iv. 1897.
- Mediterranean, Malta, or Undulant Fever. By M. LOUIS HUGHES, Surgeon-Captain Army Medical Staff. London: Macmillan and Co. Ltd. 1897.
- A Handbook of Therapeutics. By SYDNEY RINGER, M.D., F.R.S., Professor of Clin. Med., University College, Physician University College Hospital; and HARRINGTON SAINSBURY, M.D., Physician to the Royal Free Hospital 13th Edition. London: H. K. Lewis. 1897.
- William Harvey. By D'ARCY POWER, F.R.C.S., F.S.A., Surgeon to the Victoria Hospital for Children. ("Masters of Medicine" Series). London: T. Fisher Unwin. 1897.
- Transactions of the Clinical Society of London. Vol. 30th. London: Longmans. Green and Co. 1897.
- Medical Diagnosis; A Manual of Clinical Methods. By J. J. GRAHAM BROWN, M.D., Lecturer on the Principles and Practice of Medicine in the Royal College, Edinburgh. Fourth Edition Illustrated. Edinburgh: William F. Clay. 1897.
- An Epitome of the History of Medicine. By ROSWELL PARK, A.M., M.D., Professor of Surgery in the Medical Department of the University of Buffalo, etc. Illustrated with Portraits and other Engravings. The F. A. Davis Co., Philadelphia. 1897.
- Mastoid Abscesses and their Treatment. By A. BROCA, M.D., and F. LUBET-BARRON, M.D. Translated and Edited from the French by H. J. CURTIS, M.D., B.S., Assistant to the Professor of Pathology, University College. Illustrated. London: H. K. Lewis. 1897.

- Transactions of the Dermatological Society of Great Britain and Ireland. Edited by LEONARD C. BIDWELL, F.R.C.S., and GEORGE PERNET, M.R.C.S. 1896-7. Vol. iii. London: Printed for the Society by H. K. Lewis. 1897.
- Sick-Room Cookery and Hospital Diet, with Special Recipes for Convalescent and Diabetic Patients. By MAUDE EARLE, Staff Teacher of the National School of Cookery; with Notes on the Feeding of Infants, by FRANK C. MADDEN, F.R.C.S. London: Spottiswoode and Co. 1897.
- Our Hospitals, their Difficulties and Remedy. By HENRY DAVIS, Member of the Committees of the Queen's Hospital and the Skin and Lock Hospital. Hospital Sunday Committee.
- Burdett's Official Nursing Directory. 1898. Compiled and edited with the assistance of a small Committee of Medical Men and Matrons, by SIR HENRY BURDETT, K.C.B. London: The Scientific Press. 1897.
- The Birmingham Hospital Saturday Fund. Report and Statement of Accounts, 1896.
- The Practice of Massage; its Physiological Effects and Therapeutic Uses. By A. SYMONS ECCLES, M.A., M.R.C.S. Eng. Second Edition. London: Baillière, Tindall and Cox. 1897.
- Air, Food, and Exercises: an Essay on the Predisposing Causes of Disease. By A. KABAGLIATI, M.A., M.D., F.R.C.S. Edin., Honorary Gynaecologist, and late Senior Honorary Surgeon, Bradford Royal Infirmary; Consulting Medical Officer, Bradford Children's Hospital. London: Baillière, Tindall and Cox. Bradford: William Byles and Sons.

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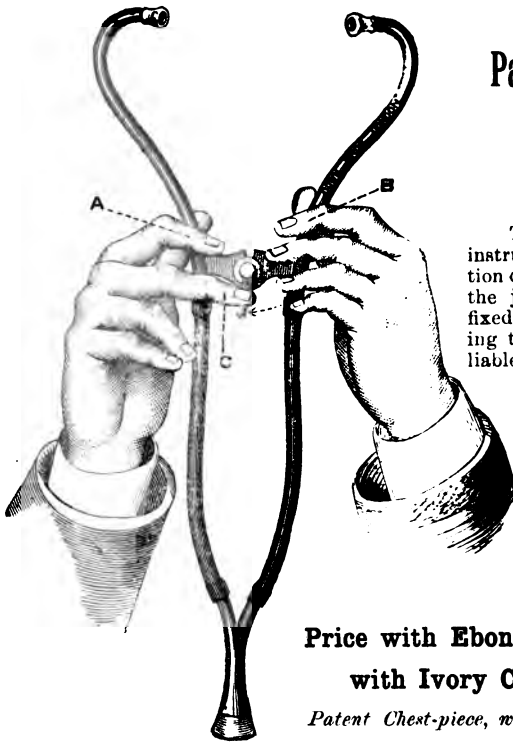
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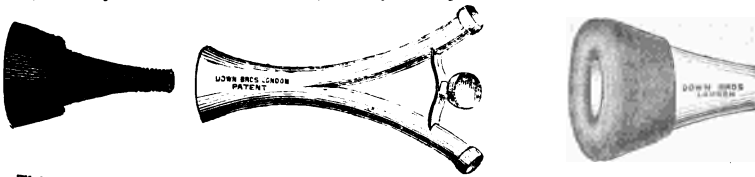
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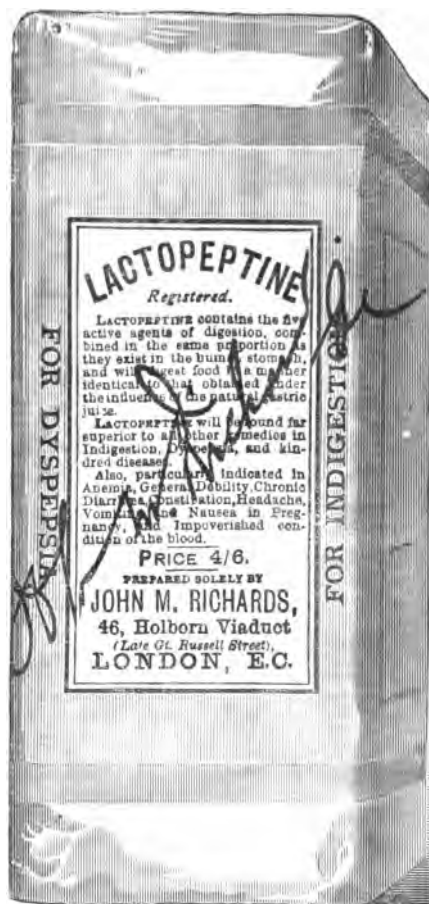
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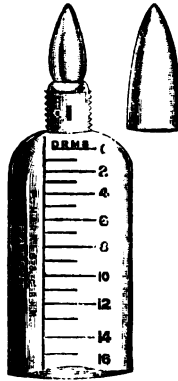
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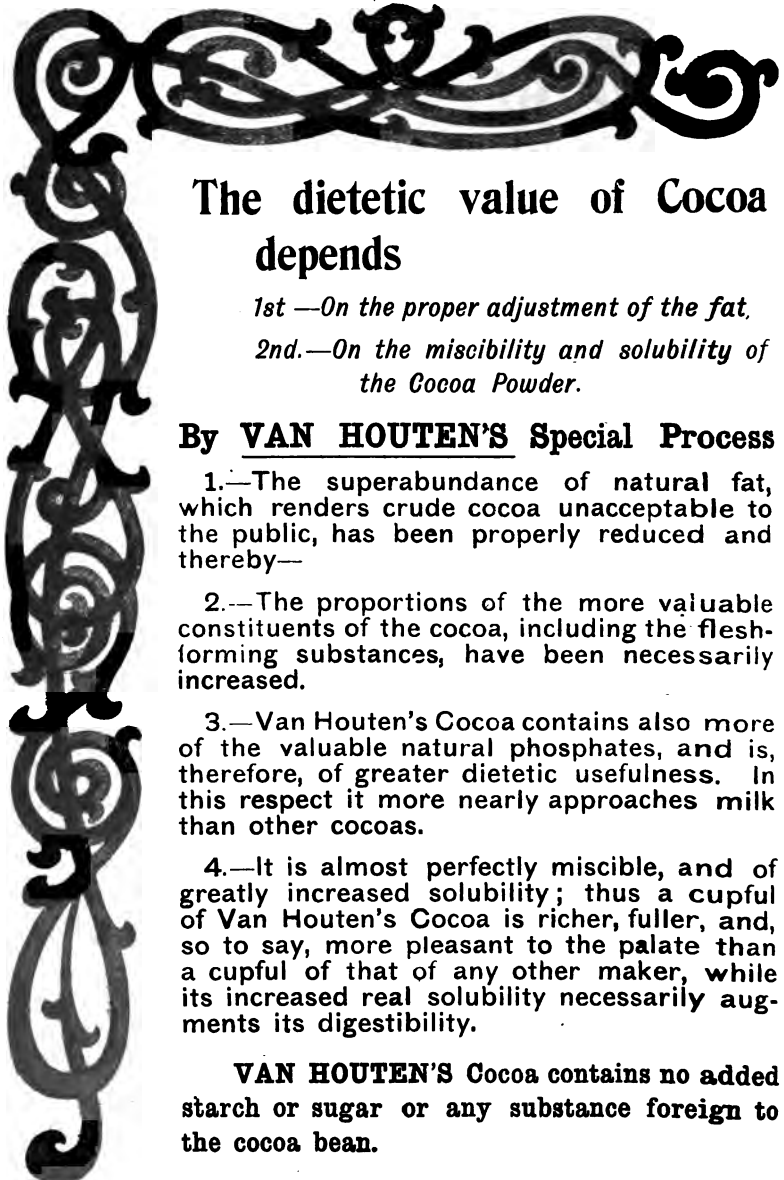
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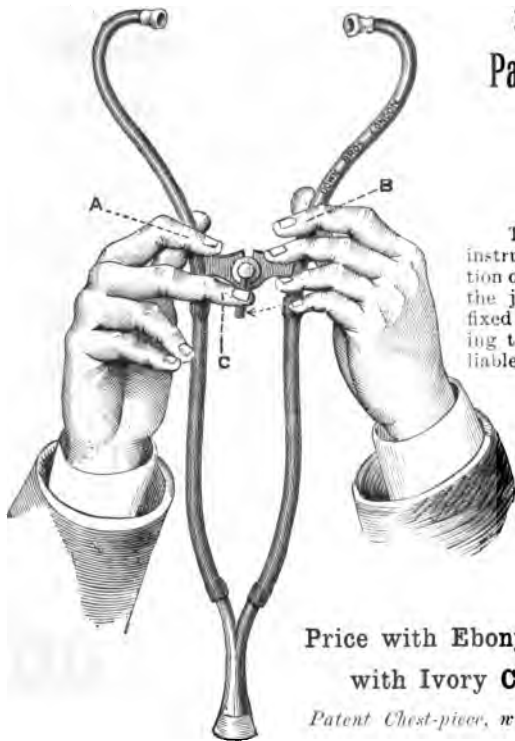
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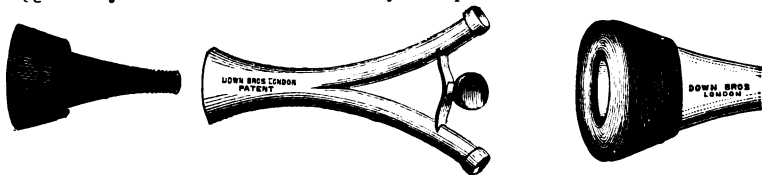
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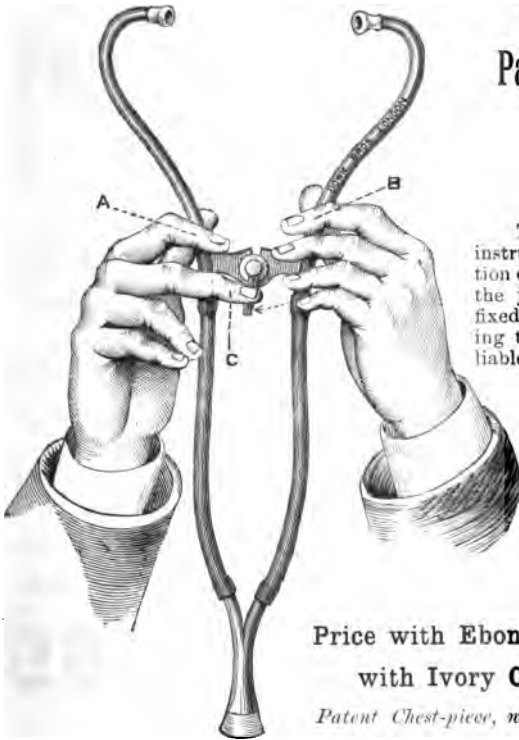
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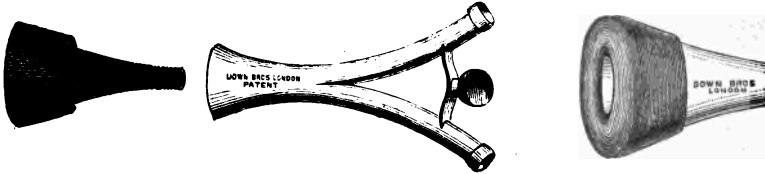
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NORTHUMBERLAND AVENUE, W.C.

13th July, 1897.

An Examination of Candidates for Entry into the Medical Department of the Royal Navy will be held in November next.

Further particulars will be announced later on.

The forms to be filled up by Candidates will be supplied on application to this Department.

J. N. DICK.

Medical Director General.

Hunyadi János

Best and Safest Natural Aperient.

25 Years' success in the United Kingdom.

RECOMMENDED AND PRESCRIBED BY MEDICAL MEN EVERYWHERE.

"Hunyadi János has established itself in favour with leading physicians and therapists of every country, whose testimonies bear witness to its action as a speedy, sure, and gentle Aperient for ordinary use; it is remarkably and exceptionally uniform in its composition, and free from defects incidental to many other Hungarian Bitter Waters."—*British Medical Journal*, Aug. 30th, 1884.

Professor Virchow, the celebrated Berlin physician, says that "HUNYADI JÁNOS" has always given him prompt and satisfactory results, and he considers it to be "one of the most valuable of the curative agents at our disposal."

CAUTION.—Every Bottle bears the Signature of the Proprietor.

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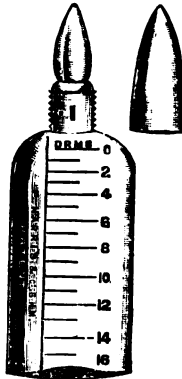
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VAN HOUTEN'S COCOA,

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" VAN HOUTEN'S PROCESS of manu-
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" a decoction containing a maximum
" proportion of the valuable food
" constituents of the bean, and what
" is of more importance still, these
" are presented in a condition more
" easy of assimilation and digestion
" than in Cocoa not so prepared."

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Drugs, Chemicals, and Pharmaceutical Preparations of the highest quality.

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Of Highest Quality, and Having
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Shakespeare—"Merry Wives of Windsor," 11., 2.

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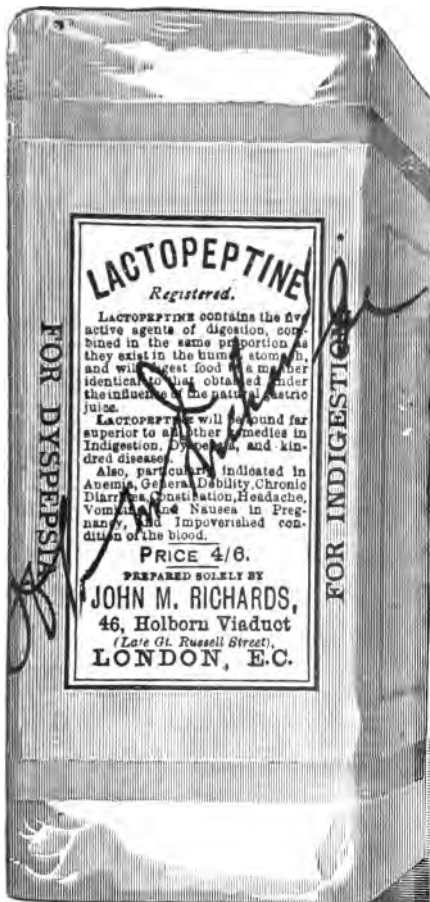
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No Pepsin or "peptic compound," in the market has anything like the evidence of established professional confidence and acceptance (extending over twenty years) which LACTOPEPTINE possesses.

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PER CENTAGE OF BUTTER FAT.

Six samples of NESTLÉ'S MILK bought at random at six different Shops, and analyzed by Mr. OTTO HEHNER, late President of the Society of Public Analysts, contained
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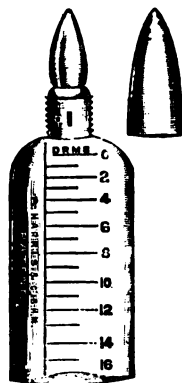
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DESCRIPTION.	MAKE.	CONDITION.	STRENGTH OF VIAL OR TUBE.	PRICE.
Antidiphtheritic Serum	British Institute of Preventive Medicine	Liquid (in vials of 5 cc. each)	1,500 units (one therapeutic dose)	5/- per case - two vials
Do. do.	Ditto	Dry (in tubes ea. eq. to 5 cc. liquid)	1,500 units	3/6 per single tube
Do. do.	Schering's	Liquid (in vials of 5 cc. each)	500 units	2/6 per single vial
Do. do.	Burrough's	Liquid (in vials of 10 cc. each)	1,000 units (one therapeutic dose)	1/- per single vial
Do. do.	Ditto	Dry (in tubes equal to 10 cc.)	Equivalent to 1,000 units	1/- per tube
Antistreptococcus	Ditto	Liquid (in vials of 10 cc. each)	...	5/- per vial
Do. do.	Ditto	Dry (in tubes equal to 10 cc.)	...	5/- per tube

The British Institute of Preventive Medicine have decided to increase the strength of the Diphtheria Antitoxin, and to send it out in cases holding two vials, each containing 1,500 units, an ordinary therapeutic dose.

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